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Windows 95 Made Easy

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Introduction



Author Tom Sheldon

Windows 95 is here! Now we have an operating system that really drives our computers and provides features that turn heads even in Hollywood. After years of dealing with DOS and Windows versions that ran on DOS, PC users now have an operating system that takes advantage of the latest hardware technologies and software standards. It is also possibly the most tested product in the history of the computer industry. Thousands and thousands of people worked with Windows 95 over a two year testing period and Microsoft has used their feedback to produce an exciting new operating system that will take you into the 21st century.

Software vendors have also been hard at work and have products that are ready to take advantage of new features in Windows 95.

Windows 95 lets you use your computer in ways that were once impossible. You can run your programs to get work done and have fun at the same time. With new multimedia features, you can create, listen to, and watch multimedia productions with sound and video. You can communicate and interact in real time with other people on a network and you can even put voice messages or video clips in e-mail messages and send them to someone on a local or global network. I guarantee that you will like Windows 95! It is a joy to use and is well worth the time you invest to learn how to use it.

Why I'm Excited About Windows 95

Over the last year, I've worked with every aspect of Windows 95. In that time, I realized that Windows 95 was easier and more fun to use than any operating system to date. But I had trouble putting my finger on just what made it so. Marketing blurbs will tell you about all the new features, like

integrated multimedia and communication. However, I think my excitement comes from something more subtle—Windows 95 doesn't hold you up. It doesn't keep you waiting for small tasks to be completed or make you finish one task before you can move on to the next. It's a feeling of streamlined efficiency, that you're not wasting your time. There is a technical reason for this. It's called *multithreading*, but I won't get into the details here. It's the kind of thing that programmers and technical wizards discuss in the back corner at cocktail parties. But it really does provide an added dimension to Windows 95 that veteran Windows users will notice immediately.

The Taskbar is another new feature I like. It's a strip at the bottom of your screen that displays buttons with the names of each application you have open. You click a button to switch among running applications. So what's the big deal? You could do that in Windows 3.1, you say. Well, in Windows 95, the Taskbar is *always* there—the buttons for all your running programs and accessories are always visible. The neat thing is that you even see buttons for open file folder windows and dialog boxes. In previous versions of Windows, it was sometimes impossible to do other things when you had a dialog box open. Typically, you would open a dialog box, set some features and get things just right, only to find out that you needed to do something elsewhere before continuing. That meant closing the box, completing that other task, then reopening the dialog box and resetting all the features. In Windows 95, you can jump around at will. I know it sound trivial, but it "feels right."

Integration is another key feature. When you install new hardware like printers and modems, or change settings, every application is potentially aware of the changes. The interface itself is more consistent than ever before. For example, you use the same techniques to explore the files on your local file system, a remote file system, an electronic mail server, or on Microsoft's online service, The Microsoft Network (MSN).

MSN is an exciting new product itself because it is designed specifically for Windows 95. By taking advantage of Windows 95 multithreading and multitasking, you can do a lot of things while you're working online, like create a new folder to store the files you download from the online service *while you're downloading another file in the background*.

Microsoft didn't hold back on multimedia features either. You're going to be amazed at how easy it is to create and play sound, video, and animation for presentations, or to include sound or video in documents and electronic mail that you can send to friends and co-workers. You can even play music CDs on your CD-ROM drive while you're working at your computer. Another neat feature called Autoplay automatically loads and runs a

program on a CD when you put the disk in the drive. You don't need to run an installation program—just put the disk in. When you're done, Windows 95 will even uninstall any files that might have been copied to your hard disk.

A Learning Strategy

Experts predict that Windows 95 will be the biggest software upgrade in history and not just because it is a major upgrade to Windows 3.1. Windows 95 brings high-level computing with an easy-to-use interface to the personal computer environment. Companies everywhere will upgrade to Windows 95, so learning to use it is at least great job security! You'll be training for the future.

This book is where you start. Remember, because Windows has a consistent look and operation, learning Windows itself is like learning the basics of running any Windows 95 application. Here's a strategy you can use:

- ❖ Your goal is to reduce computer frustration. That means learning the basics now so you don't have to fumble around in the future when you're in a hurry to get something done.
- ❖ Set aside one or two hours a day to read and work through the examples in this book. Don't think about the bills, the kids, or anything else. Focus on Windows 95 during your allotted time. You'll be glad you did.
- ❖ Think about how you can apply the examples in this book to the way you'll be using your computer.
- ❖ Windows 95 really is fun to use and it opens the doorway to many new and exciting things you can do with computers. Keep that in mind.
- ❖ You don't need to read every page of the book, but you should browse through each section and ask yourself "do I know and understand this technique?" or "can this feature help me work more efficiently?"
- ❖ Use the videotape and interactive CD-ROM learning tools described at the back of this book to reinforce what you read here. The course content of these learning tools follows the outline of this book.

I can't overstate how important it is to learn the basics. I once consulted with a banking executive who was too busy to learn about computers. She needed a few tips on using Microsoft Excel. With her looking over my shoulder, I began rearranging the screen so I could see what I was doing. I suggested saving the new arrangement so it would appear the next time she started Windows. But she was lost. The new screen arrangement was confusing. The Excel window had always come up on top with the word

processing window under it. She had never done anything else in Windows because she didn't know the basic steps for starting a new program, moving and resizing its window, or minimizing a window to get it out of the way to do things in other windows.

It is believed that over 40 percent of Windows 3.1 users never run more than one application at the same time, even though computer designers have been sweating bullets to bring us computers and operating systems that will do just that. You will barely tap the power of your computer if you don't learn everything you can about Windows 95.

About this Book

Of course this book is about Windows 95, but it is also about helping you get by in a world where computers are becoming as common as telephones and credit cards. As I mentioned earlier, your job security may depend on knowing how to use Windows effectively. Windows is now the most widely-accepted and supported computer environment in the world. That means that wherever you go, you're likely to run into an information system, a production system, a design system, or a management system that runs Windows. Knowing how to use Windows is practically a necessity for PC users working through the rest of this century.

This book starts out by teaching you the basics. You learn how to work on the Windows 95 desktop (the screen), how to start programs, how to rearrange windows, and how to do things that reduce confusion and frustration. The remaining chapters focus on specific topics, such as how to send messages to other computer users, how to access files on other computers, how to use multimedia features, and how to manage and optimize your system. Here's a synopsis of each section in this book:

- ◆ **Part I—Getting Started** The basics that everybody needs to know. If you're already familiar with Windows, look through this section to discover some interesting tips and techniques. You're bound to find something new.
- ◆ **Part II—The Windows 95 File System** Everybody needs to know this material as well. You'll learn how to browse through the file system on your computer, how to copy, move, rename, and delete files, and how to organize your file system to fit the way you work.
- ◆ **Part III—Windows 95 Programs, Accessories, and Games** This part explains how to use the writing, painting, and game programs that come with Windows 95. If you don't need to use these programs, you can skip this section, but keep in mind that these chapters are written as tutorials that help you learn how to run any Windows application.

- ❖ **Part IV—Networking and Communication** Read the chapters in this section if your computer is connected to a computer network, if you plan to connect to an online service and the Internet, or if you have a portable computer that you take on the road. (As this book is going to press, Windows 95 includes access to The Microsoft Network, and therefore we cover it in Chapter 19. However, if MSN is not included in the final release of Windows 95, it will be available as a separate product.)
- ❖ **Part V—Multimedia Tools and Techniques** This section explains just what multimedia is and how to use the multimedia features and programs in Windows 95.
- ❖ **Part VI—Managing Your System** Read this section if you're interested in learning more about protecting the data on your system, managing disk storage devices, installing applications, and optimizing the performance of Windows 95.

Additional Material

Microsoft and other vendors constantly release updates, fixes, and patches for the products they make. These fixes and patches are available from online services, vendor bulletin boards, or directly from vendors. We are writing a series of update notes that are designed to keep you up-to-date about this information and any changes to Windows 95. These notes are available free. We'll also pass along information about the latest tips, tricks, and techniques for using Windows 95.

For more information, see the back pages of this book or write:

Windows Update Newsletter
Big Sur Multimedia
P.O. Box 947
Cambria, CA 93428

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Video and Interactive Learning Tools

In addition to the update notes, we have created a videotape and CD-ROM training series that will help reinforce your Windows 95 learning experience.

The content of these learning tools is based on the outline of this book.

You can watch the tapes and then refer to the book, or you can read the book, then watch how things are done on the videos. CD-ROM training provides unique “at-your-computer” training. You can open video clips on your computer screen—right next to your work—just when you need them most.

Our animated cast of characters point out just what you need to focus on. We spotlight and magnify the action and show you how to do things in the context of everyday examples. The videotapes are divided into short, concise learning sessions that give you just the information you need. Watch how we use Windows and you’ll be on your way to becoming an expert.

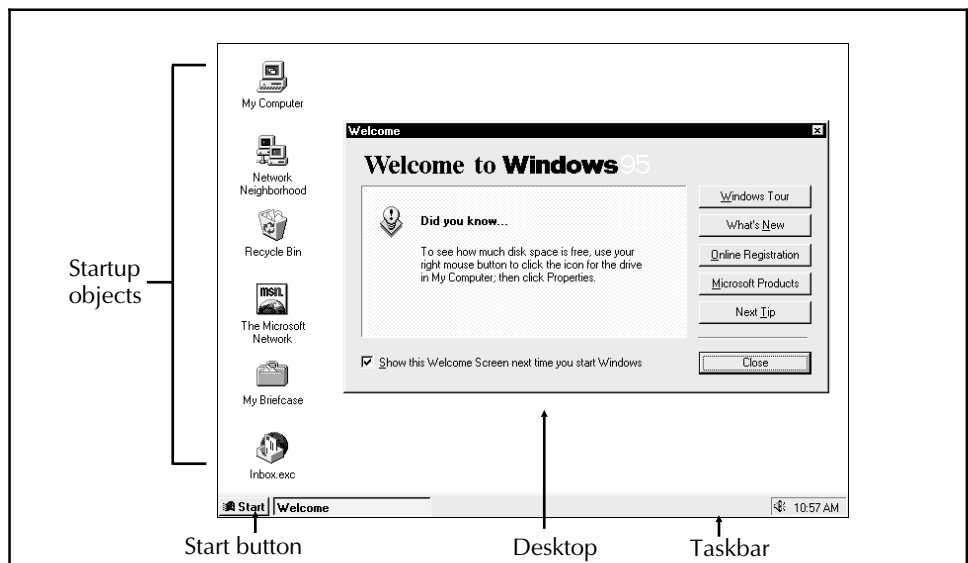
See the back of the book for detailed information about the videotape and CD-ROM training material, or call 800-280-9555. (Note: Big Sur Multimedia, not Osborne McGraw-Hill, is solely responsible for this offer.)

This chapter takes you on a visual tour of Windows 95. Numerous illustrations show you how Windows 95 works and introduce you to Windows 95 programs for writing, drawing, communicating, and managing your computer. You'll get familiar with Windows 95 features and learn where to access them.

You don't need to be at your computer when you read this chapter, but feel free to experiment. Chapter 2 guides you through hands-on exercises with Windows 95.

The Windows 95 Desktop

When you first start Windows 95, you see a screen similar to Figure 1-1. Don't worry if your screen looks a little different—the way Windows 95 looks on your computer screen depends on the types of programs installed and whether someone else has made changes. The entire screen is called a *desktop* and it is designed to look like the top of a real desk. You can write letters, create drawings, or use a calculator while working on the desktop in the same way you work on the surface of a real desk.



The Windows 95 opening screen
Figure 1-1.

Some of the tools and accessories available with Windows 95 are much more elaborate than anything you've used on your own desktop. Not only can you work with familiar accessories like calculators, notepads, and organizers, you can also organize all your files, use your computer like a telephone, send faxes, connect with remote information services like CompuServe, listen to recorded voice messages, and watch videos. In Figure 1-2, a calculator, a writing application, and a video are running at the same time. Each runs in a separate "window" on the desktop.

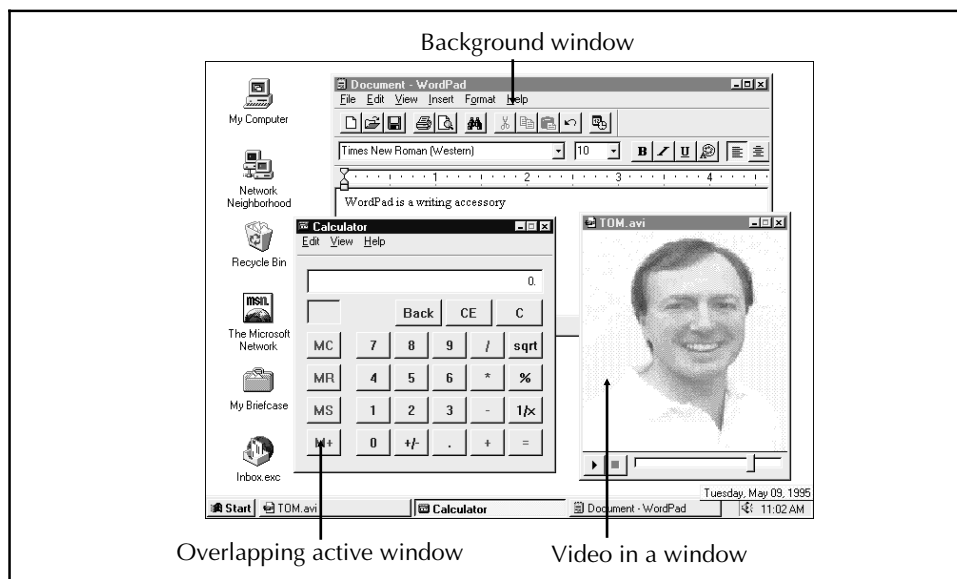


Tip: Having trouble using the keyboard or mouse? Open the accessibility options in the Control Panel.

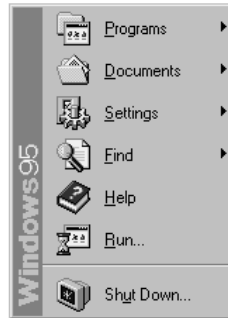
The Start Menu

It's easy to get started with Windows 95. You simply point with the mouse at the Start button in the lower-left corner of the screen, then click the left

Accessories
on the
Windows 95
desktop
Figure 1-2.



mouse button. A menu appears, as shown here. You can click any item on this menu to open another menu or start a program.



When you click an option that has a right-pointing arrow, such as Programs or Documents, a *cascading* menu opens, as shown next. Cascading menus display additional options. The following illustration shows the cascading menu that appears when you select the Programs option on the Start menu. Keep in mind that your computer might have different options on the Programs cascading menu.

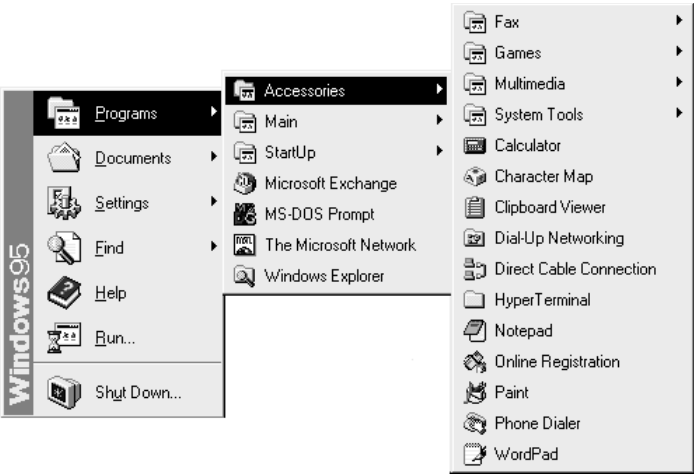


Clicking the Accessories option on the Programs cascading menu opens the Accessories menu, as shown in Figure 1-3. This is the menu you open when you want to start the programs and accessories provided with Windows 95—programs like Calculator, WordPad, and Paint. Notice that the programs and accessories are listed in alphabetical order.

Selecting WordPad from the Accessories menu opens a window similar to the one in Figure 1-4. WordPad is a writing program. You can use it to write letters or other documents.

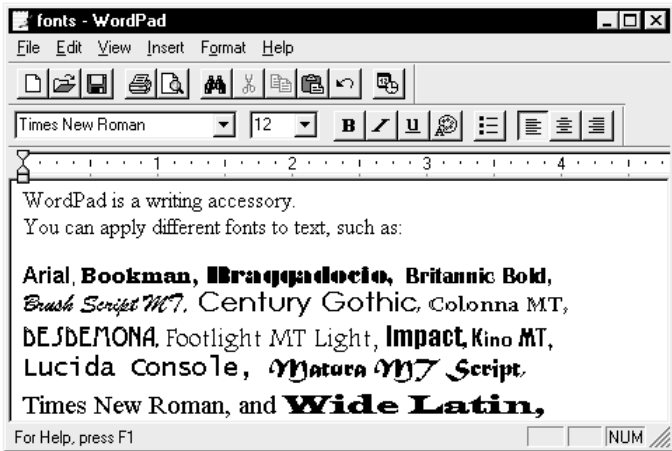
The Accessories cascading menu

Figure 1-3.



Use WordPad to read and write documents

Figure 1-4.





Note: Windows 95 is a multitasking environment, which means that you can run several programs at once. For example, while WordPad is running, you can start other accessories like Paint (a painting program) or a communication program, then switch among the different programs to get your work done faster.

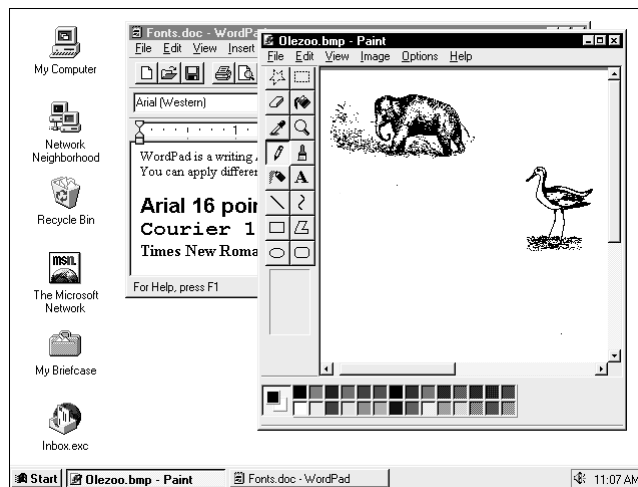
Active and Inactive Windows

Figure 1-5 shows what the desktop looks like when both Paint and WordPad are running. Each application runs in a separate window. Notice that the Paint window overlaps the WordPad window. Since the Paint window is on top, it is called the *active*, or *foreground*, window. The active window is the one that responds to mouse movements and keystrokes from the keyboard. In Figure 1-5, the WordPad window is the *inactive*, or *background*, window. To make an inactive, background window the active, foreground window, do one of the following:

- ⇒ Click it with the mouse
- ⇒ Click a button on the Taskbar (the Taskbar is discussed next)

Two open windows. The one on top is the active, or foreground, window.

Figure 1-5.





Tip: Windows 95 doesn't ignore programs in background windows. It still gives them the attention they need to complete a task while you work in a foreground window. For example, you can sort a mailing list in the background while you write a letter in the foreground.

1

The Taskbar

When more than one application is running at once, the desktop can get a bit cluttered. That's when you use the *Taskbar*, which is located along the bottom of the screen. When multiple applications are running, a button representing each application appears in the Taskbar (see the bottom of Figure 1-5). To switch to another application window, simply click the button for the application in the Taskbar.



Windows 3 users: The Taskbar takes the place of the Task List utility that you used to switch among programs in Windows 3.

Start Menu Options

Before moving on, let's take another look at the options on the Start menu. It's good to know some of these options are available, especially the one called Help! If your Accessories menu is still open, click a blank portion of the desktop with the left mouse button.

- ⇒ **Programs** Opens a menu with different programs, including folders that contain groups of programs.
- ⇒ **Documents** Choose this option to open a document that you've recently opened.
- ⇒ **Settings** This is where you go to change the settings of Windows 95.
- ⇒ **Find** Choose this option to find files on your system or locate other computers in your organization.
- ⇒ **Help** Choose this option to get help on any Windows 95 topic.
- ⇒ **Run** Choose this option to run a program that is not listed on the Start menu.
- ⇒ **Shut Down** Choose this option before turning off your computer.

Why Icons and Objects Are Different

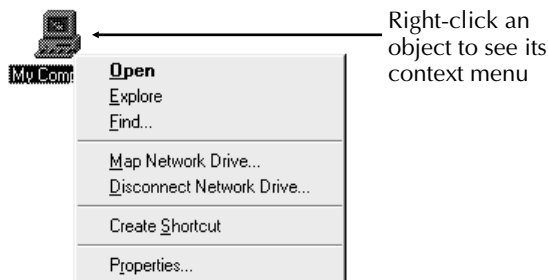
If you look again at Figure 1-5, you'll see several small icons on the left side of the window labeled My Computer, Network Neighborhood, Recycle Bin, and so on. You might not see all these icons on your own computer—once again, that depends on how it was set up. For example, Network Neighborhood only appears if your computer is connected with other computers for file sharing and printer sharing.

Before going further, let's define the difference between an icon and an object. In previous versions of Windows, the small images that represent programs and files were called *icons*, but in Windows 95 the term *object* is more appropriate. Objects represent programs, data files, folders, and devices like printers. An object can provide you with information about the thing it represents so you don't have to look elsewhere.

If you wanted to get information about a program or a document in previous versions of Windows, you had to first start File Manager, then click the icon for the program or document, then choose Properties from the File menu. In Windows 95, you just right-click an object that represents a program or document, then choose Properties from a menu.

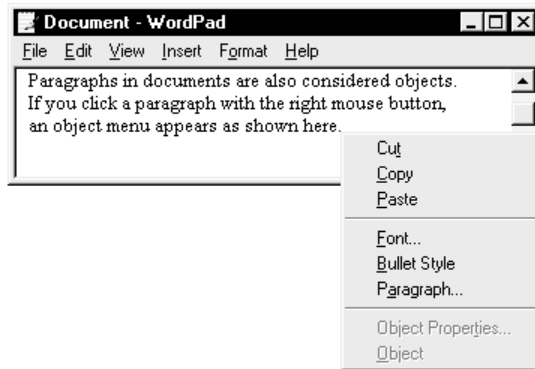
Here are some techniques for working with objects:

- ⇒ **Right-clicking** When you click an object with the right mouse button, a *context* menu appears that lets you work with the object itself or get information about it.



- ⇒ **Double-clicking** When you double-click an object, the object “opens” to reveal its contents. If the object is a document, the document opens so you can edit it. If the object is a folder, a window opens that shows objects like files and other folders stored in the folder. (Windows are discussed in the next section.)

Even a block of text or a graphic in a WordPad document can be considered an object. In the following example, I right-clicked a paragraph to display its menu of options:



From this menu, I can change the paragraph's fonts, add bullets, or do other paragraph formatting.

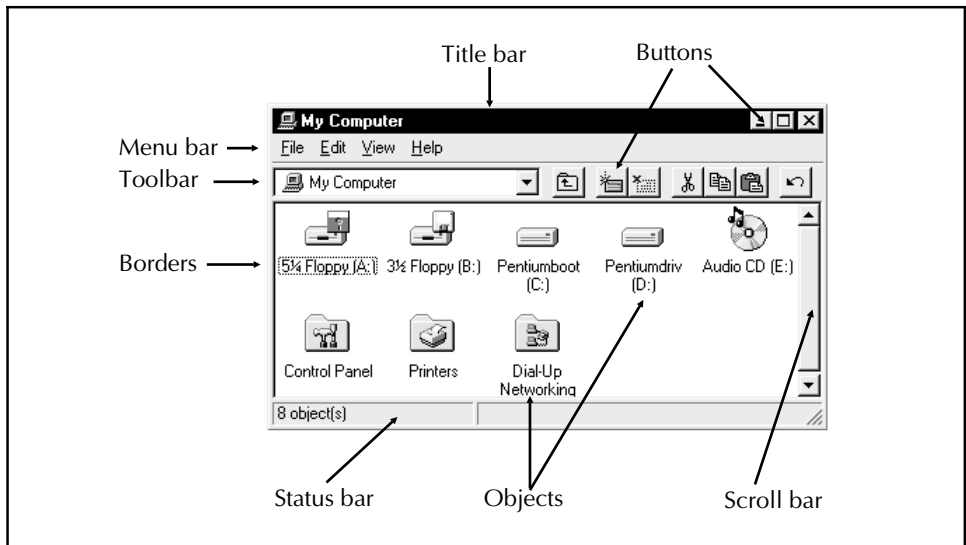
Window Features

Now let's look at window features. Figure 1-6 shows the window that appears when you double-click the object called My Computer. All windows have borders and title bars, and some have menus, buttons, and scroll bars as well.

Here are a few quick tips that describe how to access and use the features of a window:

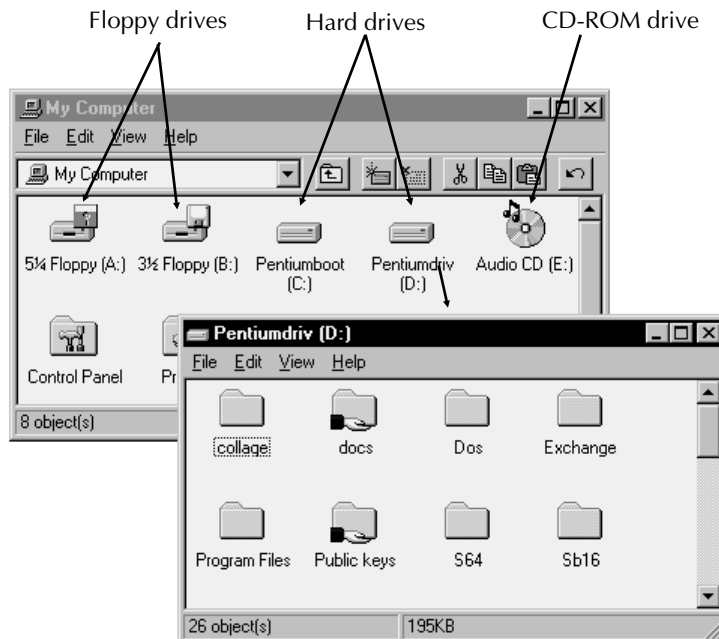
- ⇒ **Moving windows** Click and drag a title bar to move a window.
- ⇒ **Resizing windows** Click and drag window borders and corners to resize windows.
- ⇒ **Choosing menu commands** Menu bars have "options" like File, Edit, and View. Click a menu option to display its drop-down menu and choose an option.
- ⇒ **Scrolling** Use the scroll bar to scan through the contents of a window.
- ⇒ **Choosing often-used commands** Click buttons on the toolbar to execute often-used commands. The buttons on toolbars vary, depending on the window.

A typical window
Figure 1-6.



About Your Computer

The My Computer window holds objects that represent the built-in resources of your computer. A typical My Computer window is pictured below. In this example, I double-clicked the Drive D object to view its files and folders, as shown in the overlapping window.



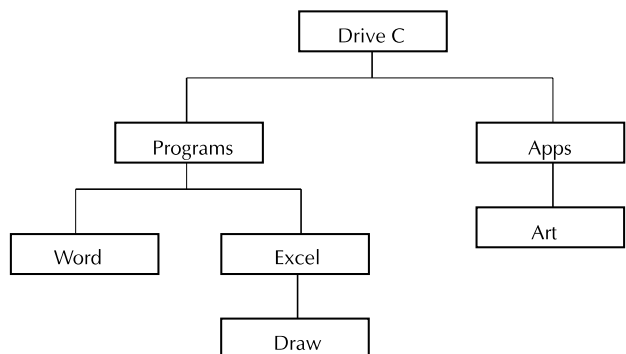
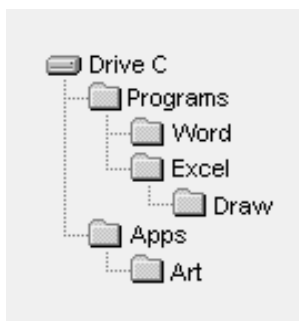
Here are a few things to notice about the My Computer window:

- ⇒ Floppy disks are either drive A or drive B. Your system might only be equipped with one floppy drive called drive A.
- ⇒ Hard drives are labeled starting with the letter C. Each additional drive has a successive letter, like D and E. Many systems will only have a drive C.
- ⇒ CD-ROM drives are shown as round disks. If you only have one hard drive (drive C), the CD-ROM is the next drive letter (drive D). If you have two hard drives (drives C and D), the CD-ROM is drive E.

The My Computer window is your starting point for accessing the files and other resources on your computer. You first select a drive object, then access the files on it. When you double-click a drive object, a window appears to reveal the folders, files, and other objects on that drive.

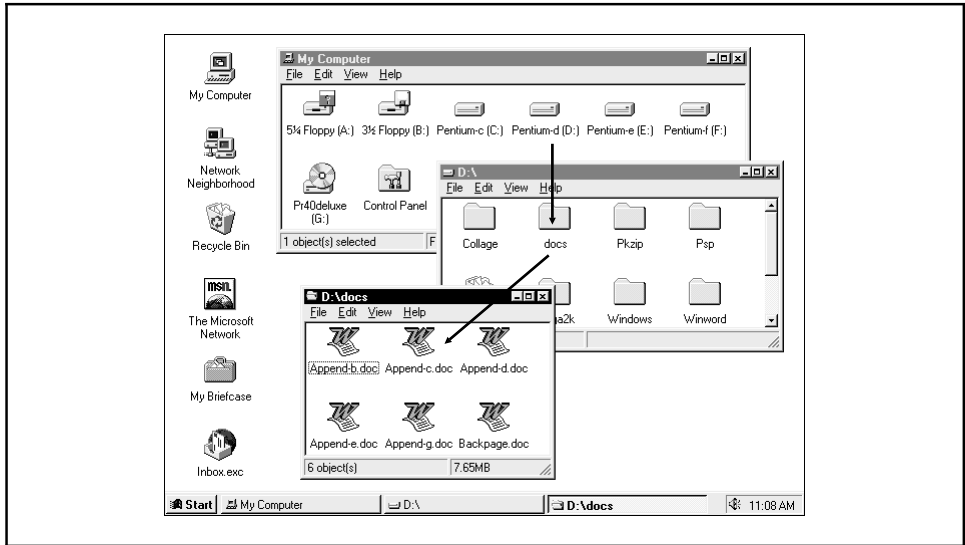
The Windows 95 File System

The Windows 95 file system is based on folders. Folders hold files and other folders, so the system is hierarchical, or “tree structured.” The benefit to you is better organization of your files and information. You can create a folder hierarchy similar to the one in the following illustration to help keep track of your files and organize your work based on file types or projects. In the illustration, the folder hierarchy is pictured on the left and the logical structure is pictured on the right.



Note: Folders are the same as DOS directories and subdirectories.

Traversing
the folder
hierarchy
Figure 1-7.



Working with Folders and Files

Figure 1-7 shows what happens when you traverse the folder hierarchy of a typical disk drive. First, you open the My Computer window to display the drive objects for your system (top). Next, you double-click the D drive object to open the middle window and see the files and folders on the D drive (middle). You can then double-click a folder (the Docs folder in this example) to open a window on that folder (bottom). The bottom window shows other folders and files you might want to work with.

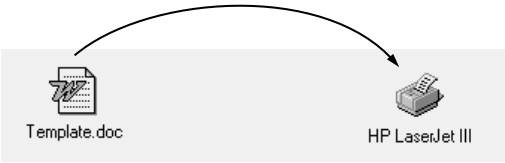


Tip: Notice that the names in the title bars of each window correspond to the object that was opened.

Once you have windows open that show the contents of drives and folders, you can work with the files and folders in the following ways:

- **Starting programs** Double-click a program object to start the program.
- **Opening documents** Double-click a document object to open the document for editing.
- **Printing documents** To print a document, click and drag the document object over the printer object, as shown here:

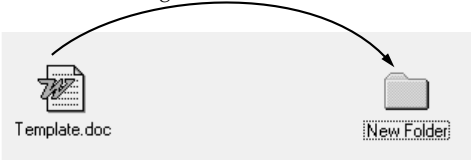
Click and drag a document over a printer object to print it



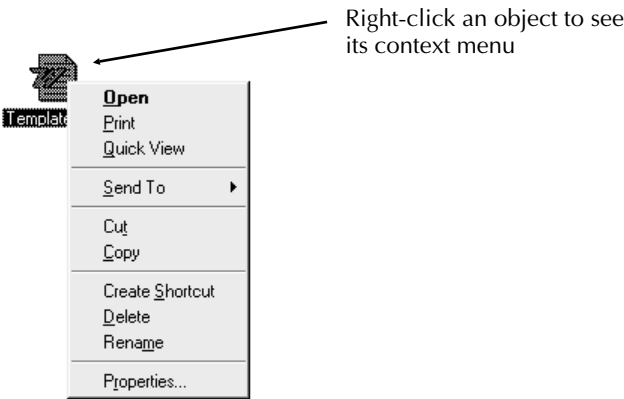
Note: Instructions for using the mouse, as well as instructions for dragging objects, can be found in “Using the Mouse” at the start of Chapter 2.

⇒ **Copying and moving files** To copy or move a file, just click and drag it to a new location, as shown here:

Click and drag to move a file into a folder



⇒ **Seeing an object's menu** Display a menu of things you can do with an object by clicking it with the right mouse button:



The Explorer

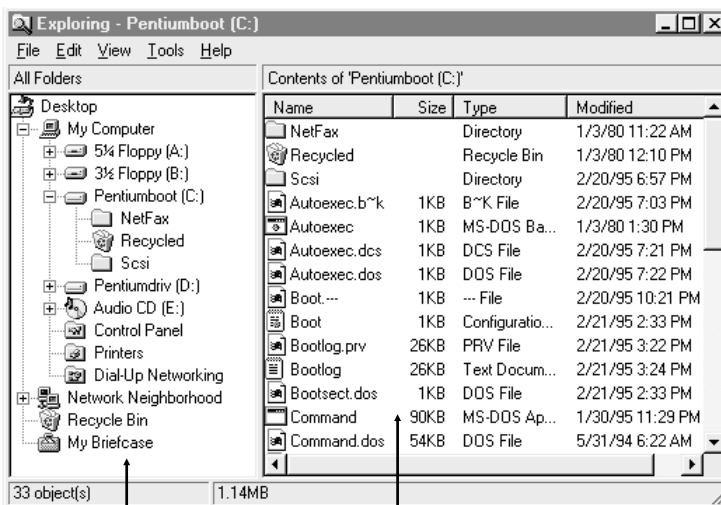
Explorer is a file-management utility that provides an alternative method of accessing the Windows 95 file system. In the previous section, you saw how to explore the folders and files on your computer by opening windows and seeing the contents of drives and folders. As you open new folders, overlapping windows appear on the desktop. While this method is very intuitive, your desktop can really get cluttered with windows.



Note: The Windows Explorer takes the place of the File Manager that was in previous versions of Windows.

The Windows 95 Explorer utility provides a different way to locate and work with folders and files. You can copy, move, and delete files, just like you can while working on the desktop, but the techniques are different. Some people prefer using the Explorer to copy and move files, but you'll decide for yourself after working with both techniques.

Explorer gives you a view of your entire filing system, as well as file systems on other computers in your organization if you're connected to a network.



An Explorer window
Figure 1-8.

Devices and folders

Contents of selected device or folder

You start Explorer by choosing Programs on the Start menu, and then Windows Explorer on the Programs menu. A typical Explorer window is shown in Figure 1-8.

The Explorer presents two views of your filing system. On the left, you see the drives on your system listed under “My Computer.” Filing systems on other computers are listed under the “Network Neighborhood” heading. The drives and folders are arranged in a hierarchical tree structure. When you click a drive or folder, its contents appear in the window on the right.

Once the object you want to work with appears on the right, you can perform any of the tasks outlined in the previous section, such as copying or deleting files. Copying files is simplified because you can simply drag any file to any drive or folder on the left. If you tried to do similar operations on the desktop, you would need to open and arrange many different windows. You’ll learn more about this Explorer in Part Two of this book.

Windows 95 Applications and Accessories

Windows 95 comes with a set of programs called “accessories.” You can use accessories to write, paint, calculate, and perform other tasks. To start an accessory, click the Start button, click on Programs, and click on Accessories. You’ll see the Accessories menu pictured back in Figure 1-3. Some of the accessories are described in the following pages.

Windows 95 accessories have common features, so they are easy to learn and use. For example, the procedure for opening, saving, and printing documents is the same in all the accessories, so once you learn one application, you’ll know many of the procedures for working with others. A useful feature in all Windows 95 applications is the ability to cut and paste text, graphics, or other information (like sound and video clips) from one location in a document to another, or from one program to another. For example, you can copy graphics created in Paint to a WordPad document.

WordPad

WordPad is designed for writing small notes and documents, but you can use it to create much larger documents as well. WordPad does not have some of the features of more sophisticated word processors like spell checking, a thesaurus, and mail merge, but it is perfect for home users, small office applications, or just writing a quick note. It has a complete set of document formatting features, so you can align paragraphs, change fonts, and set page layouts. The WordPad window is pictured back in Figure 1-4.

Paint

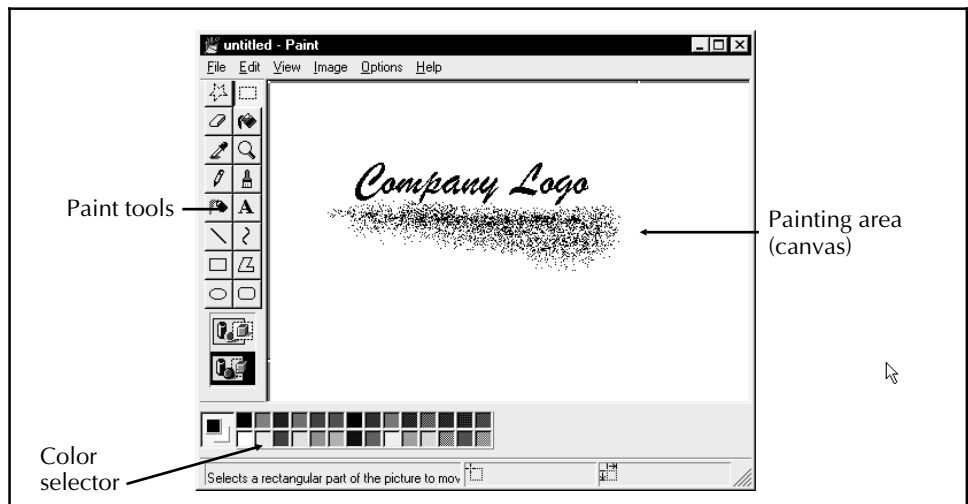
You can use the Windows 95 Paint accessory to create full-color illustrations and graphics. Once you've created an illustration, you can copy it to another document. For example, you can create a company logo and copy it into letters you write with WordPad. The Paint window is shown in Figure 1-9.

The basic procedure for using Paint is to select a tool from the toolbar and a color from the Color selector area, then begin painting in the workspace. The tools in the toolbar are for painting, drawing with a pencil, erasing, spray painting, zooming in, zooming out, typing text, and creating boxes, circles, and polygons. You can select specific objects within the painting and flip, stretch, shrink, or delete them. Once a painting is complete, you can save it to disk or copy it into another document by using cut and paste techniques.

Other Accessories

Microsoft has included a number of other accessories with Windows 95. Some are only useful if your computer is connected to a network, has a modem, or has multimedia components like sound boards and video boards. You'll learn more about these accessories in Part Three.

⇒ **Calculator** A standard desktop calculator that can be switched into advanced mode with scientific, statistical, and number conversion functions.



Create graphics in the Paint accessory
Figure 1-9.

- ⇒ **Microsoft Exchange** An electronic mail program that lets you exchange messages with a variety of applications, including Microsoft Mail, Microsoft Exchange Server, and Lotus Notes. You can also connect with CompuServe and the Internet to exchange mail.
- ⇒ **At Work Fax** A built-in faxing facility that lets you send and receive faxes directly from your documents. You can view and edit faxes in a special fax viewer, then copy and paste all or part of the fax to other documents.
- ⇒ **HyperTerminal Connections** A communication utility that lets you connect with other computers or online services over the telephone lines.
- ⇒ **Font Manager** Lets you add new fonts, view fonts, print font samples, and delete fonts to free memory.
- ⇒ **Phone Dialer** A utility that keeps track of phone numbers and automatically dials numbers for you if you have a telephone modem.
- ⇒ **CD-Player** If you have a CD-ROM drive, you can use the CD-Player to play music CDs. You can even create custom *playlists* that include the tracks you want to play and the order in which you want to play them.
- ⇒ **Sound Recorder** A multimedia utility for recording and playing back sounds. You can create recorded messages and include them in files or include them in electronic mail messages you send to other users.
- ⇒ **System Tools** Windows 95 includes a good set of system tools that let you optimize your hard drive, check it for errors, and compress it to gain more disk space. If other people are using your computer, you can monitor and control how they use your system.

Running DOS Programs

DOS (disk operating system) is an operating system that predates Windows. It is text-oriented rather than graphically oriented. Many people still have programs that require DOS, so Windows 95 provides the MS-DOS command interface, which appears in a window similar to the one pictured here.



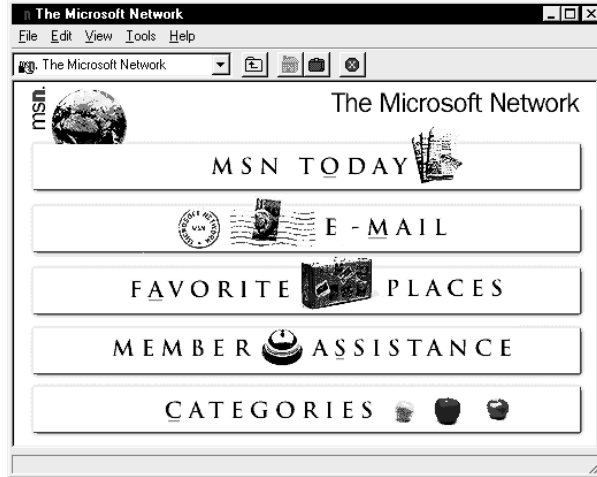
My Briefcase



You can resize the window so you can work with other application windows, or expand it to full-screen size. Veteran DOS users who prefer to work with files using DOS commands can open this window by clicking the Start button, then choosing MS-DOS Prompt on the Programs menu.

The Microsoft
Network
window

Figure 1-10.



Briefcase: Going Mobile with Windows 95

The Windows 95 Briefcase helps you keep files at your office synchronized with files you take with you when you travel. Briefcase is designed for mobile users who carry portable computers with them while traveling.

The Briefcase appears on the Windows 95 desktop as shown here.

The principle behind Briefcase is simple. You can have multiple copies of files on different systems. The Briefcase keeps track of which files are the most recent and updates files on the system that does not contain the most recent files. In this way, you can take files home or on the road, and when you return to the office, Briefcase automatically synchronizes the files on your desktop computer with the files you updated on your portable computer.



Tip: Chapter 17 discusses many other features in Windows 95 that support mobile users.

Communicating with Windows 95

Communicating with other users is a big part of Windows 95. It fully supports *networking* so you can connect with other users in your organization

to share files or share peripherals, including printers. Windows 95 also has extensive communication tools. Using these tools, you can exchange mail and information with users anywhere in the world. You can connect over the *Internet* (a worldwide network of computers) or connect with popular online services such as CompuServe.

Microsoft has even created its own online service called *The Microsoft Network*. If a modem is installed on your computer, Windows 95 is ready to dial The Microsoft Network. All you have to do is double-click the Microsoft Network object on your desktop. In a moment, you see the screen shown in Figure 1-10.

The Microsoft Network can provide you with a whole new world of information. Not only can you get news and information about the latest changes and updates to Windows 95, you can also exchange electronic mail with any other user on the network, look up a variety of information under Categories, and get the latest breaking news under MSN Today.

This completes our overview of Windows 95. Of course, we haven't begun to touch on all its features and functions, but it's best at this point to get some hands-on training before going further. In Chapter 2, you'll learn the basics of working with the Windows 95 interface.

Chapter 1 presented an overview of Windows 95. In this chapter, you'll get hands-on experience working with the operating system's interface. After you learn the basic techniques covered here, you'll be ready to explore Windows 95 even further in the next few chapters.

Starting Windows 95

The first thing to do is turn your computer on. Windows 95 loads automatically, so you don't need to type any special commands to get it running. In a few moments, you see the opening Windows 95 screen. It looks similar to Figure 2-1, but may not look exactly the same. Don't worry if it looks different. You'll still find it easy to follow the instructions in this chapter.

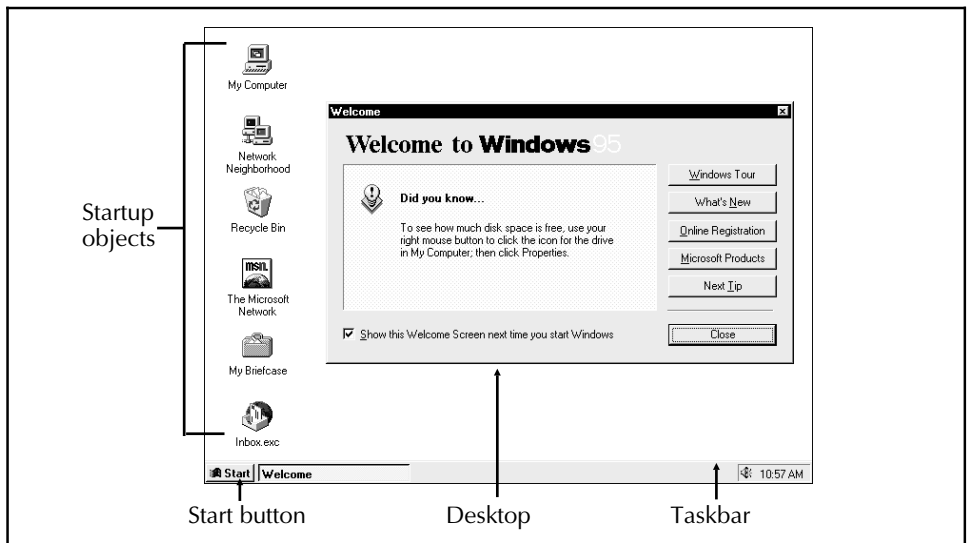


Tip: You can enlarge the text on your screen if it is too small to read. Refer to “Changing Color Schemes and Fonts on the Desktop” in Chapter 5.

Using the Mouse

Mouse pointing devices for computers have been around for over a decade, so we'll assume you know what they are and what they do. If you've used a mouse before, glance through this section to learn some new Windows 95 mouse techniques.

Windows 95 opening screen
Figure 2-1.



If you've never used a mouse before, the best way to learn is to just move it around and watch the mouse pointer on the desktop. Get used to "targeting" the mouse by pointing at various objects. The idea is to point to something, then click.



Tip: Left-handers can switch the functions of the left and the right mouse buttons. Refer to "Making the Mouse Work Just Right" in Chapter 5. You can also make the mouse pointer arrow bigger if you have trouble seeing it.

Here are the four basic mouse techniques:

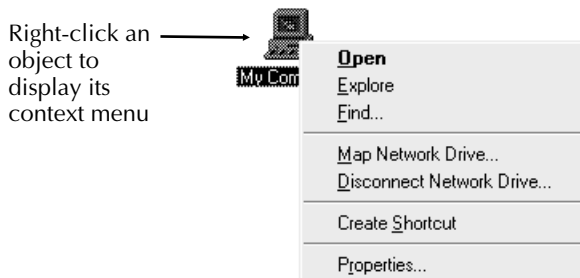
- ⇒ **Left-button click** "Selects" something, like an object or an option in a list. When you are told to "click" something, it means to click it with the left mouse button. "Right-click" means to click with the right mouse button.
- ⇒ **Click and drag** You point at an object like a window or icon, then click and hold down the mouse button while dragging the object to another location
- ⇒ **Right-button click** Displays a menu when you click an object
- ⇒ **Double-click** Starts a program or opens a window

Try some of these techniques now by working through the following steps:

1. Click the My Computer object with the left mouse button. The object is highlighted. This is how you *select* an object you want to copy, move, delete, and so on.
2. Click the My Computer object again, but this time hold the mouse and drag the object to another location on the desktop, as shown here. When you release the mouse, the object is repositioned in the new location. Now move it back.



- Click the My Computer object with the right mouse button to open its context menu, as shown here. You'll learn about this menu later. To close a menu, click a blank part of the desktop.

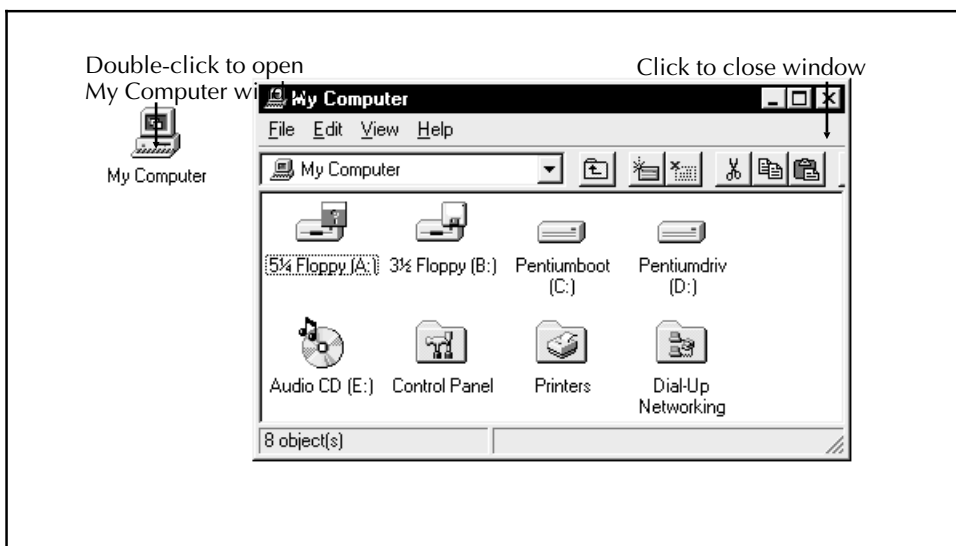


- Open the My Computer window by double-clicking the My Computer object with the left mouse button. A window similar to the one in Figure 2-2 appears. You'll get a chance to explore these features later.
- Close the My Computer window by clicking the X button in the upper-right corner.



Tip: If the mouse pointer gets too far off the screen, just pick up the mouse and reposition it on your mouse pad.

The My Computer window
Figure 2-2.



Home Base: The Start Menu

Microsoft makes it easy to get started with Windows 95. Just locate the Start button in the lower-left corner of your screen, then point at it with the mouse and click the left mouse button. The Start menu appears, as shown here:



2



Tip: You can customize the Start menu for your own use by adding options for the programs you use most often. You'll learn about this in Chapter 5.

Notice the different types of options on the menu:

- ⇒ A menu option with a right-pointing arrow opens cascading menu.
- ⇒ A menu option with an ellipsis (...) opens a *dialog box* (a dialog box displays additional options you can set before executing a command, as you'll learn later).

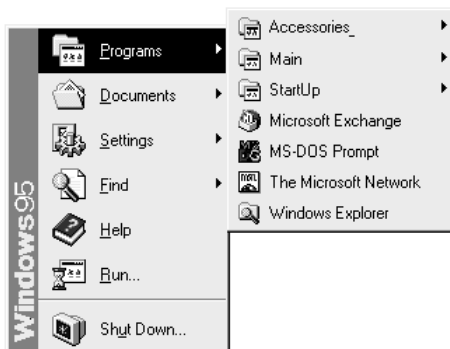
Let's open a cascading menu and start a program:

1. Click the Programs option on the Start menu to open the Programs cascading menu, as shown in Figure 2-3. Your Programs menu may look a little different.
2. Drag the mouse down through the Programs menu until the Windows Explorer option is highlighted, then click the left mouse button.

The Windows 95 Explorer application opens in a new window on the desktop. That's how easy it is to start a program. You can leave Explorer open on the desktop for now since you'll work with it in the next section.

The Programs
menu

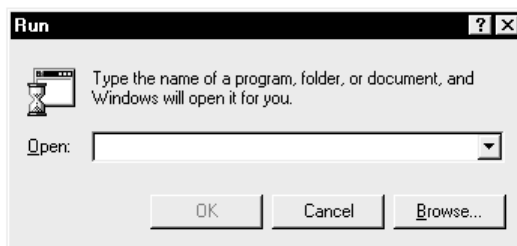
Figure 2-3.



Tip: You don't need to click an option to open its cascading menu. A cascading menu opens automatically if you pause on it while dragging the mouse.

Now open a dialog box. A dialog box appears when Windows 95 needs additional information to execute a command or start a program.

1. Click the Start button, then click the Run option on the Start menu. The following dialog box appears:



2. A blinking cursor appears in the Open field. Type **Explorer**, then click the OK button or press the ENTER key on the keyboard.

Now you have two Explorer windows on your desktop! This illustrates two points:

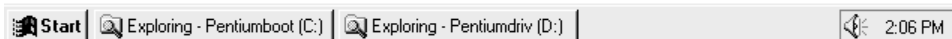
- ⇒ You can run multiple copies of a program. That way you can look at different types of information or view different documents at the same time.
- ⇒ You can start programs (like Explorer) in a number of different ways. One way is to choose the program from the Start menu. Another is to open the Run dialog box and type the program's name. Later, you'll learn other ways to quickly start programs you use often.

Obviously, it's easier to start a program by choosing its name on a menu. But you may discover that some of your programs aren't listed on the Start menu. That's when you use the Run dialog box, or when you follow a procedure to add the name of the program to the Start menu, as you'll learn to do in Chapter 5.

Switching Windows with the Taskbar or Keyboard

In the last section, you opened two windows that each ran the Explorer utility. Just click the window you want to work in. Since Explorer lets you view the files on your computer, you might look at the files on your floppy drive in one Explorer window and the files on your hard drive in the other Explorer window. This way, you can compare files side by side.

Example: In the top Explorer window, click a different drive icon in the left pane. Now notice the Taskbar at the bottom of the desktop. It shows buttons for the two versions of Explorer, and each button displays the name of the drive currently being displayed in the window:



Opening Even More Windows

Now open yet another window by double-clicking the My Computer object so that its window opens on top of the two Explorer windows. Look at the Taskbar and notice the new My Computer button, as shown here:



Windows 3 users: The Taskbar replaces the Task List in Windows 95.

A desktop with a lot of open windows is a confusing desktop, but the Taskbar can help you stay organized and quickly access a window you want to work with. Click each button in the Taskbar to see how you can switch among the open windows.



Remember: The window at the top of the stack is called the “active window.”

More Windows Switching Tricks

Another way to switch among the windows on your desktop is by pressing keys on the keyboard. There are two methods:

- ⇒ Press ALT-TAB **to open the switcher dialog box, as shown here. Keep pressing ALT-TAB until the window you want to work with has a box around it. Window names appear in the lower text field. When the window you want to access is selected, let up on the keyboard.**



- ⇒ Press ALT-ESC **repeatedly to “scroll” through open applications until the one you want to work with appears at the top of the window stack.**

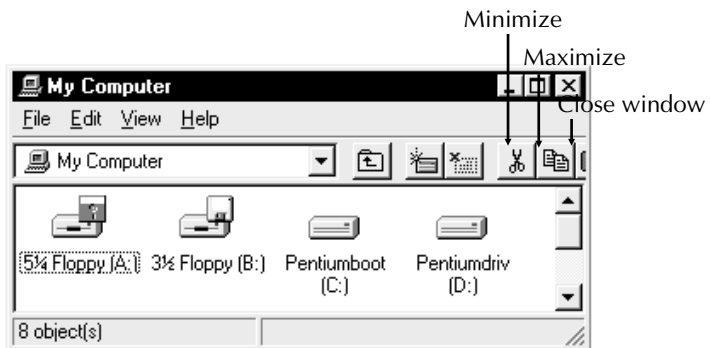
Note that this technique only scrolls through open windows, not minimized windows.



Tip: Write these key combinations on a sticky note and paste the note to your computer screen for future reference.

Minimizing, Maximizing, and Closing Windows

The Minimize, Maximize, and Close buttons are located in the upper-right corner of every window, as shown here:



Use these buttons to quickly resize a window to fill the entire desktop, to hide the window, or to close the window.

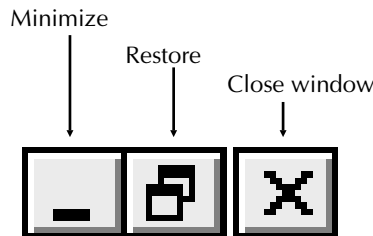
Follow the steps below to experiment with these buttons:

1. Make the My Computer window active by clicking its button in the Taskbar. You opened the My Computer window in the previous section.
2. Click the Maximize button to enlarge the window so it fills the entire desktop.



Tip: You maximize a window so you can see more of its contents. As an added bonus, programs actually run faster in a maximized window.

When a window is maximized, the Maximize button is replaced with the Restore button, as shown here:



When you click this button, the window reverts to its original size. You can manually change the size of any window (changing window size is covered in Chapter 3), and when you click Restore, the window reverts to the size you changed it to.

3. Click the Restore button to restore the My Computer window.



Tip: An interesting way to work with multiple windows on a desktop is to maximize all the windows at the same time, then switch among them by clicking Taskbar buttons or using the keyboard techniques described earlier under “More Windows Switching Tricks.”

4. Click the Minimize button for all the open windows. This step removes the windows from the desktop, but keep in mind that the applications are still running in your computer’s memory. You can click a Taskbar button to quickly put an application back on the desktop.



Tip: Programs that are open on the desktop or minimized to a button in the Taskbar continue to use the computer’s memory. If you need to run other programs as well, you might run out of memory or see some loss in performance. If you don’t plan on

using a program for a while, close it completely by clicking the X, or Close Window, button in its window.

5. Close the two Explorer windows at this point to free up memory in your computer. Click the Taskbar button for each window, then click the X button in the upper-right corners of the windows.

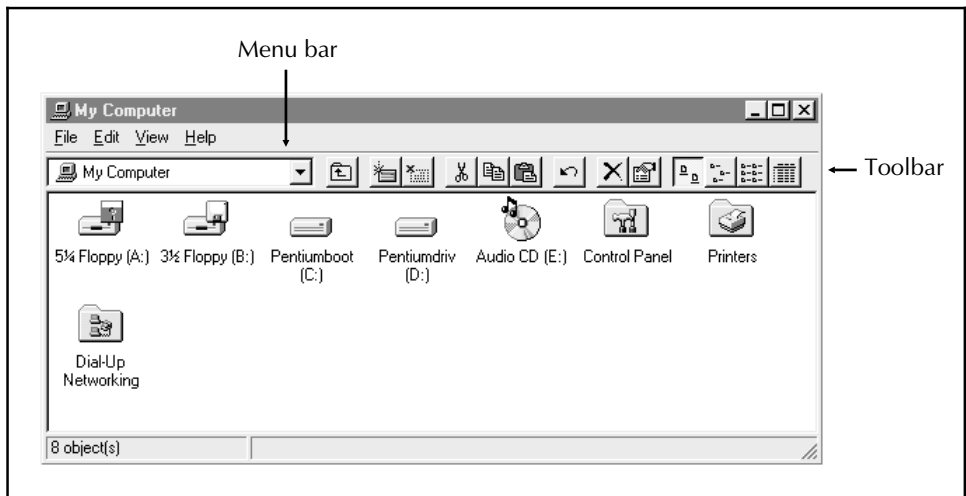
You'll use the Maximize and Minimize buttons extensively when working with Windows 95. Start thinking about the daily routine you'll use when working with Windows 95. You might open a word-processing program like WordPad or a spreadsheet program like Excel as well as a scheduling or electronic mail program. You'll switch between all of these programs during the day to create documents, check schedules, and do other things. It doesn't make sense to open and close these programs every time you need them.

Just keep them open and switch between them as needed, assuming your computer has enough memory to run all the programs at the same time.

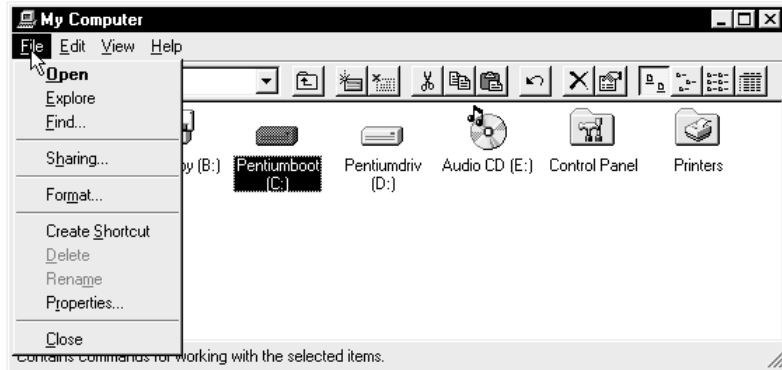


Tip: Get in the habit of maximizing the window you're working with, then minimizing it when you need to work in

The My Computer window



The File menu
in the My
Computer
window
Figure 2-5.



another window.

The My Computer Window

Let's explore the contents of the My Computer window. Open it again by clicking its button in the Taskbar (or by double-clicking the My Computer object if you closed the window). Your window will look similar to the one in Figure 2-4, but may have a different set of objects and object names, depending on how your computer is set up.

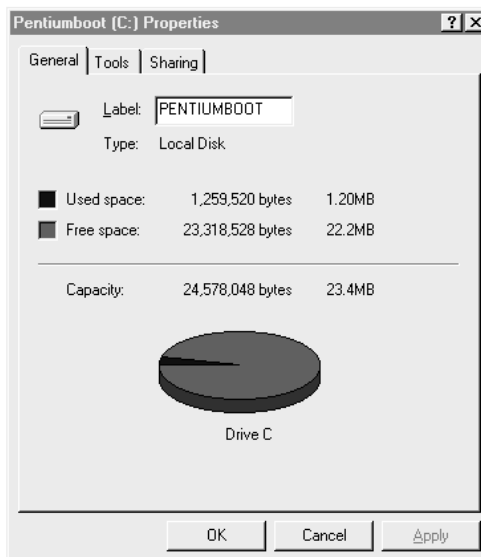
The My Computer window is the starting point for accessing your computer's filing system. Among other tasks, you open this window to choose the disk storage device you want to work with, to open folders that contain information about the fonts and printers on your system, and to customize how Windows 95 works by way of the Control Panel.

Click once on the Drive C object in the window. This selects the object. Now click the word File in the menu bar. The File menu appears with a list of "things" that you can do with the object you selected, as shown in Figure 2-5.

- ⇒ **Open** Opens the selected object in a window, which is the same as double-clicking the object.
- ⇒ **Explore** Opens the Explorer so you can look at the file structure of the drive and do things like copy files.
- ⇒ **Find** Helps you search for files on the selected drive or anywhere in your filing system.
- ⇒ **Sharing** Lets you share the selected drive with other users in your organization that are connected to your computer.
- ⇒ **Format** Erases the selected drive. In most cases, you only choose this option when you've selected a floppy drive.
- ⇒ **Create Shortcut** Places a shortcut for the object on the Windows 95 Desktop; you can quickly access it by double-clicking the shortcut.
- ⇒ **Properties** Displays information about the object.
- ⇒ **Close** Closes the open window.

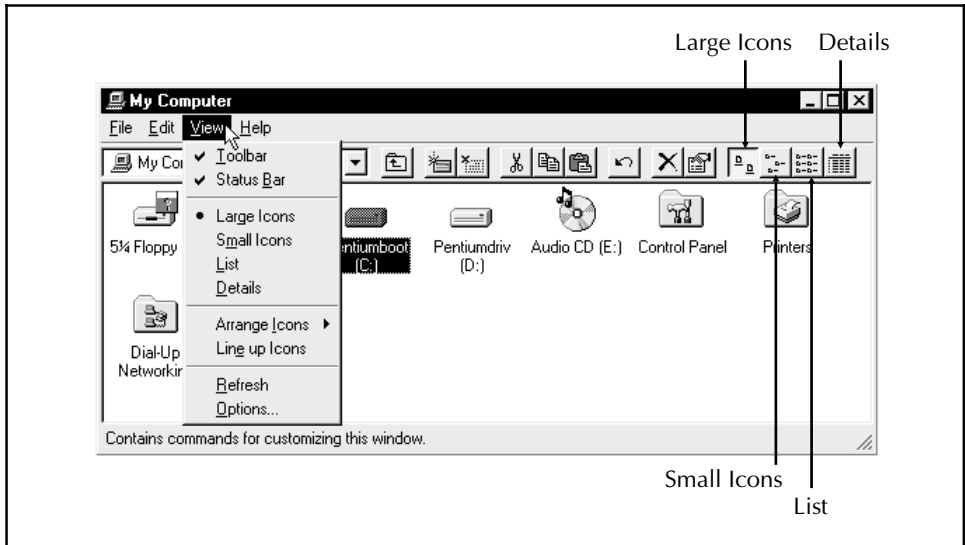


Caution: Be aware of what you are doing when you choose the Format option. You can accidentally delete all the programs and files on a hard drive



The Properties dialog box for Drive C
Figure 2-6.

The My Computer window toolbar and corresponding menu options
Figure 2-7.



with this option.

We'll discuss some of the other options on the File menu later. However, one interesting option for disk drives is Properties. Click it now to see information about the disk drive you selected. The Properties dialog box appears, as shown in Figure 2-6. When you're done looking at the disk drive information, click the Cancel button at the bottom of the dialog box.

Toolbar and Status Bar Features

Almost every window you work with has a *toolbar* and a *status bar*. The toolbar provides push-button access to common menu options. For example, the buttons on the toolbar in the My Computer window execute commands that you can also choose from the window's View menu. Notice the similarities between the buttons and the menu options in Figure 2-7.

You can turn the toolbar on or off by clicking the Toolbar option in the View menu. You would turn it off if you didn't need to use its functions, and doing so gives the window more room to display objects or text. In most cases, however, you'll leave the toolbar on and click the buttons rather than choose menu options.

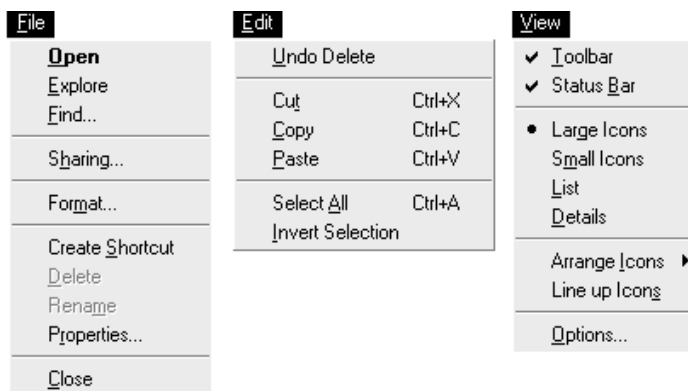
The status bar displays information relevant to the work you are doing, such as the size of a file you've selected or a message about what an application is

currently doing. Like the toolbar, you can turn the status bar on or off by clicking Status Bar on the View menu. You might want to turn it off to save space.

You can view descriptive information about a window by clicking its various parts and reading the messages in the status bar. For example, to see what options on a menu do, click a menu name and look at the status bar, then slide the mouse pointer down the menu items and read about them on the status bar.

More About Window Menus

Almost every window has a menu bar with a File, Edit, and View menu. If you still have the My Computer window open on your desktop, take a look at each menu by clicking File, Edit, and View. (If not, double-click the My Computer object to open the My Computer window.) A picture of each menu is shown in the following. Start getting familiar with the options on these menus because you'll be using them a lot in your everyday activities.



Here are the basic techniques for using menus:

- ⇒ **Selecting options** You open a menu, then click an option on the menu to select it, just as you did when working with the Start menu.
- ⇒ **Toggling an option (✓)** Options with check marks are *toggled* options. If the option is checked, it is on. You toggle an option on or off by clicking it with the mouse.

- ⇒ **Choosing bulleted items (•)** Options with bullets are part of groups, and only one item in a group can be on at a time. The current selection in the group is marked with a bullet.



Note: If you open a menu and don't want to make a selection, press the ESC key on the keyboard or click outside the menu with the left mouse button.

Try the following exercise to familiarize yourself with turning toolbars and status bars on and off. Both steps assume that the toolbar and status bar are on. (You'll learn more about the toolbar in upcoming chapters.)

1. Click **Toolbar** on the **View** menu to turn the toolbar off. Repeat this step to turn the toolbar back on.
2. Click **Status Bar** on the **View** menu to turn the status bar off, then repeat to turn it back on.



Note: Any changes you make to the features of a window are retained for the next time you open the window.

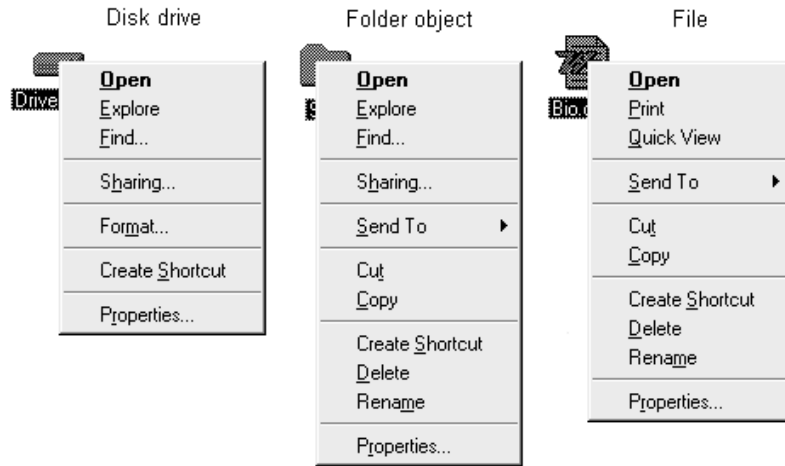
Keyboard Menu Access Methods

Note that the names on the menu bar and the options on menus have underlined letters. You can press the ALT key and an underlined letter to quickly access a menu. For example, to access the **Toolbar** toggle option on the **View** menu, you would press ALT-V to drop down the **View** menu, and then press T.

In some cases, it's easier to use keyboard shortcuts to execute menu options than it is to remove your hand from the keyboard, grab the mouse, and point to the menus. This is especially true if you are doing repetitive tasks or if you need to access a menu option often.

Object Menus

When you right-click an object, its object menu appears. Each type of object has a menu with the appropriate options. Here are examples of menus for disk drives, folders, and file objects:



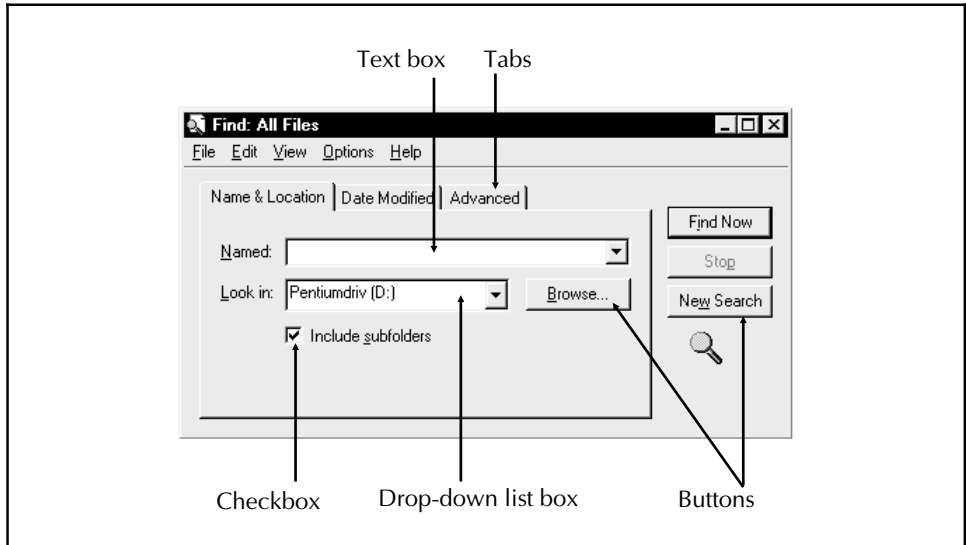
Notice the following about these menus:

- ⇒ All menus have an Open option. Choosing Open is the same as double-clicking the object. If the object is a file, Open loads the file into the application that you used to create the object.
- ⇒ All objects have a Properties option so you can view information about the object itself, like its creation date, size, location, and attributes.
- ⇒ The disk and folder objects have Explore and Find options so you can browse through and locate the folders and files contained in the objects.
- ⇒ The file object has options called Print (to send the file to a printer), Quick View (to quickly open a file to see what's in it), and Send To (so you can easily send the file to a printer, a fax machine, a disk drive, or a device on a network).
- ⇒ The folder and file objects have Cut, Copy, Delete, and Rename options so you can copy or move the objects to other locations, delete them, or change their names.

As an exercise, click an object on the desktop or in the My Computer window with the right mouse button, then choose Properties on the menu that appears to see information about the objects. When you are done viewing an object's properties, close the Properties dialog box by clicking the X button in its upper-right corner.

The many different features of a typical dialog box

Figure 2-8.



Buttons, Boxes, and Controls

When you choose a menu option with an ellipsis after its name (like the Run... option on the Start menu), a dialog box opens. You use dialog boxes to change settings, specify additional information, pick options, choose files, or do a number of other things. While every dialog box has a unique arrangement, features on dialog boxes like buttons and list boxes work the same way from one dialog box to the next. Therefore, it's useful to learn to use these features before continuing.

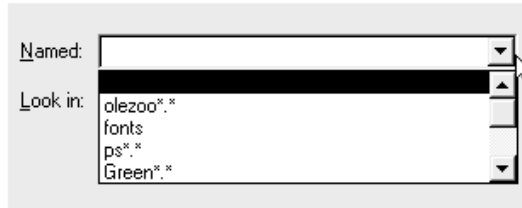
Figure 2-8 shows a typical dialog box. If you want to experiment while you read this section, open this dialog box by choosing Find on the Start menu, then clicking Files or Folders on the cascading menu that appears.

Here are the kinds of things you usually find in dialog boxes:

- ⇒ **Tabs** Click the tabs to view different “pages” of a dialog box. The dialog box in Figure 2-8 has three tabs—Name & Location, Date Modified, and Advanced.
- ⇒ **Fields** All dialog boxes have *fields* where you type text or select options. To access a field, click it with the left mouse button. You can

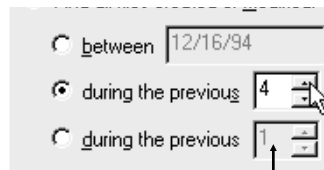
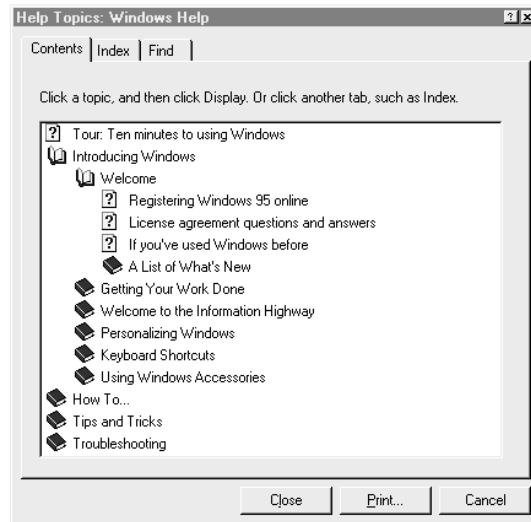
also press the TAB key on your keyboard to jump between fields. If you keep pressing TAB, you'll eventually loop back around to the starting place. You can also press SHIFT-TAB to move backward field by field through a dialog box.

- ⇒ **Underlined letters** Press ALT and the underlined letter in a field name to quickly jump to that field.
- ⇒ **Text boxes** You type information such as the name of a file or program in text boxes. You can press the BACKSPACE key on the keyboard to edit what you've typed or click anywhere in the text with the left mouse button to make a change.
- ⇒ **Drop-down list boxes** Drop-down list boxes appear when you click the down-arrow button in a text field, as shown in the following. A drop-down list box simply presents an expanded list of options.



- ⇒ **OK and Cancel buttons** Dialog boxes have a variety of buttons. The two most common are the OK button and Cancel button. You click OK to execute the command with the settings you've made, or Cancel to forget the whole thing.
- ⇒ **Apply button** Some dialog boxes have Apply buttons that you click to apply any changes you've made without closing the dialog box. You can then view the changes and make more changes if you like.
- ⇒ **Checkboxes** A checkbox is a toggle switch that you set on or off by clicking it with the mouse.
- ⇒ **Spin boxes** You use a spin box to scroll through a list of values or items. In the following illustration, you can see spin boxes in the "during the previous day(s)" and "during the previous month(s)" fields. You click on either the up- or down-arrow button in a spin box to increase or decrease the values in the fields. You can also just type a value in the field.

The Windows
95 Help
facility
Figure 2-9.



Spin boxes

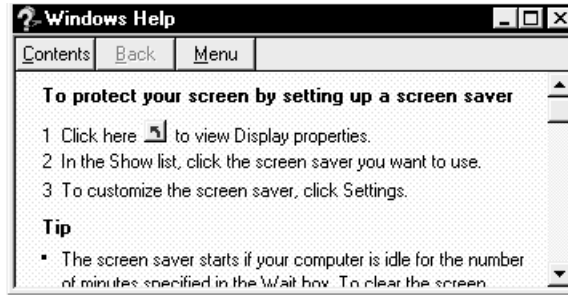
Get Help!

You can get help at any time by clicking the Help option on the Start menu. A window similar to the one in Figure 2-9 appears. You click the Contents tab to search for help information in books by title (notice the book icons on the left side of the topics in the figure). You click the Index tab to search for help information on a particular topic.

The Help Contents Tab

“Books” of information are displayed when you click Contents. By double-clicking on a book, you can see its chapter titles. For example,

Introducing Windows is opened in Figure 2-9. Under it, you see a list of related books. The Welcome book, which has a chapter called “If you’ve used Windows before,” is open. You can double-click the title of a chapter to read its contents. When a topic is open, it appears in a window like the following:



You can use the scroll bars to scroll through a topic. You can click Contents or Index to return to the master help window. You can also click the arrow buttons in the text of a topic to quickly jump to related information. Some words in the text of a help topic are green and underlined. You can click these to see a description of the word or subject.

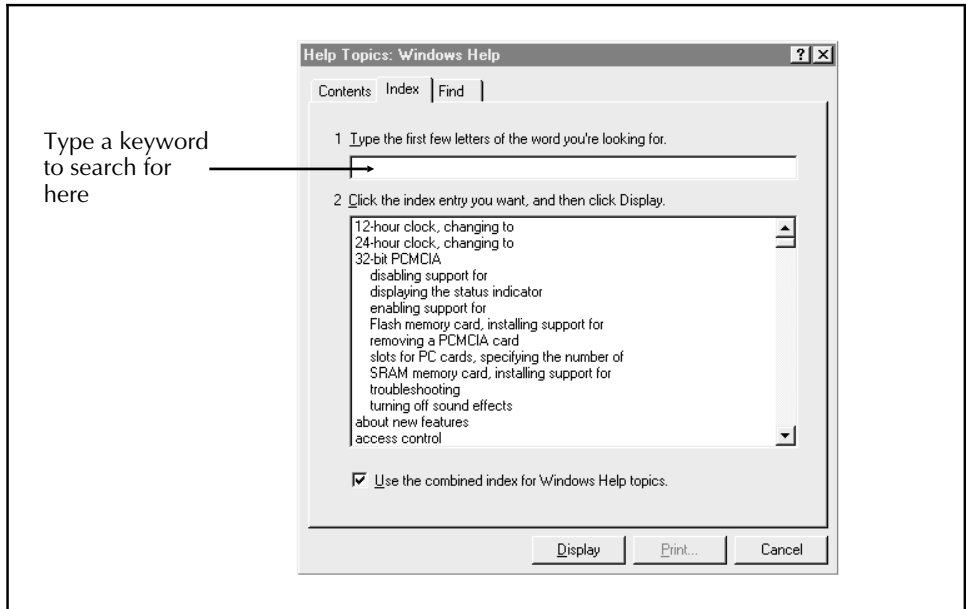
If you click the Menu button, you see the following list of options:

- ⇒ **Annotate** Adds your own notes to the help topic for future reference or for other people to refer to.
- ⇒ **Copy** Copies the text on the *Clipboard*, an invisible holding area for text. You can then paste the text in a word processor and edit it.
- ⇒ **Print Topic** Prints the current help information.
- ⇒ **Font** Reduces or enlarges the font size.
- ⇒ **Keep Help on Top** Determines how help windows are displayed.
- ⇒ **Use System Colors** Converts help windows to your current system colors.

The Help Index Tab

Click the Index tab on the main help window to search for specific information. A window similar to the one in Figure 2-10 appears. Type a *keyword*—that is, a word describing the topic you want help on—in the first field. For example, you would type the keyword **format** to get information about formatting diskettes. As you type the keyword, notice that Help finds

Searching for
information
in the help
system
Figure 2-10.



the topic after you type only the first four letters (in this case, after typing “form”) because it searches as you type each letter. Double-click the topic you want to read about in the lower window.



Tip: You can view help information while working in most Windows 95 applications. You’ll find a help menu option that displays a help window similar to the one discussed here, except it will have help information for the application you’re working in.

Always Shut Down Properly!

Always make sure you close Windows 95 properly before you turn your computer off. Never switch the power off without following shut down procedures described below. Windows 95 stores some information in a memory area called the *cache*. Even if you have saved files in the applications you were working with, Windows 95 may still have information in the cache it needs to write to disk. If you just turn off your computer, this information might be lost.

1. If you leave windows open, they will be reopened in the next session. Close windows you don’t want open the next time you start Windows 95.

2. Click the Start button, then click Shut Down.
3. Windows 95 saves information in the cache and any configuration information, then displays a message saying it is OK to turn your computer off. When you see this message, you can power the system down.

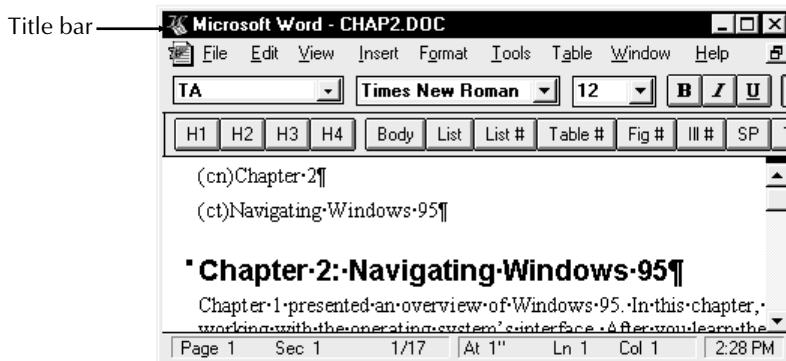
In Chapter 2, you learned basic techniques for working with Windows 95, including how to use the mouse, the Start menu, and window features. In this chapter, you'll continue to explore the Windows 95 interface. Here you'll learn how to move and resize windows, switch from one window to another, and how to efficiently arrange your desktop.

Moving Windows

Windows 95 lets you view the contents of several windows at the same time. You can place one window next to another, then view the contents of the left window while working in the right window. You can even copy the contents of one window to another window. Invariably, when you open a new window, it appears on top of something else you want to see. To see another window or more of the desktop, you move and resize windows using the techniques discussed here.

The Title Bar

The *title bar* is the part of the window that shows the name of the program and/or document in the window. For example, the title bar you see here is from a window running Microsoft Word with the file CHAP2.DOC open in the workspace:



You move windows by clicking and dragging the title bar. Try the following exercise:

1. Double-click the My Computer object on your desktop to open its window.

2. Move the window by clicking its title bar and dragging it to another place on the desktop. As you drag the mouse, a shadow border, as shown in Figure 3-1, appears to help you reposition the window.
3. Release the mouse button. The window moves to the new position.



Tip: You can double-click the title bar to *maximize* a window so it fills the entire desktop, then double-click it again to *restore* the window to its original size. Remember, programs run faster in maximized windows.

When multiple windows are on the desktop, commands or keystrokes only affect the top, or active, window. The title bar of an active window is highlighted, while the title bar of an inactive window is “grayed out.”

3

Resizing Windows

You *resize* windows so you can see more of the desktop, see underlying windows, or see more or less of the contents of a window. Try resizing the My Computer window now by following these steps:

1. Point to a window border or corner with the mouse. The mouse pointer turns into a double-headed arrow, as shown here:



2. Click the left mouse button, then drag inward to reduce the size of the window or outward to increase its size. Release the mouse button when the window is the right size.

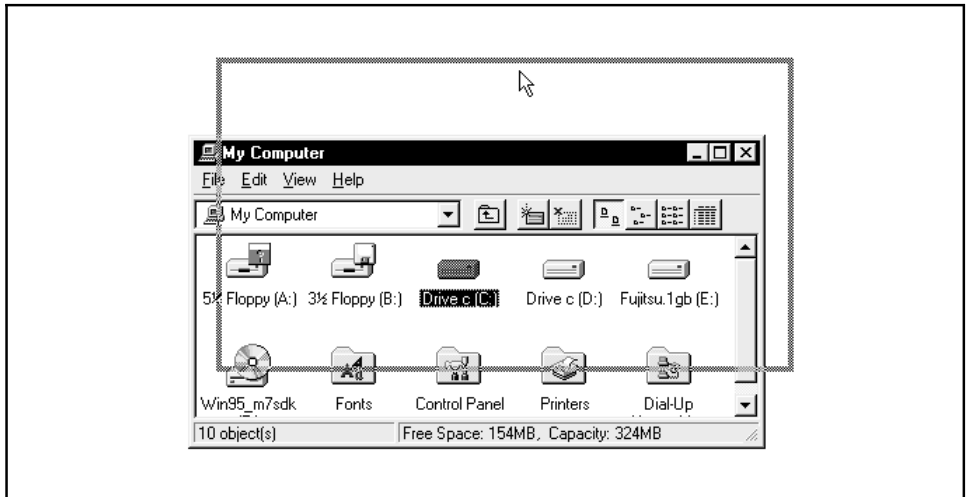


Tip: Dragging a corner resizes a window in two directions. Dragging a border resizes a window in only one direction.

After you’ve resized windows, you can move them around to get a better view of underlying objects. If you have two open windows, for example, you can move them side-by-side to view the contents of each or move information between them.

Moving a window

Figure 3-1.



Working with Scroll Bars

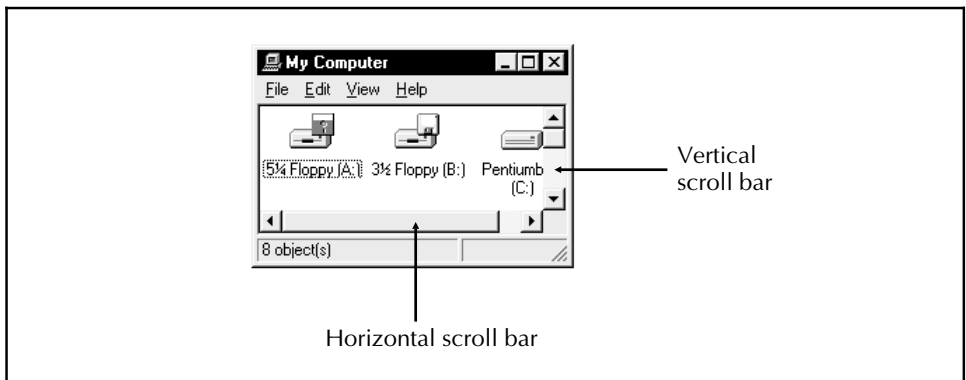
Scroll bars automatically appear when a window is too small to show the entire contents of a file or folder. In a window for a drive or folder, for example, you can use scroll bars to scan through the list of files and folders, as shown in Figure 3-2. In a window running a program such as a word processor, you can use scroll bars to scan through the pages of the document in the window.



Note: Scroll bars aren't always advantageous. They get in the way if a window only has a few objects, and if that is the case, you can enlarge the window just enough to make the scroll bars disappear.

Horizontal and vertical scroll bars

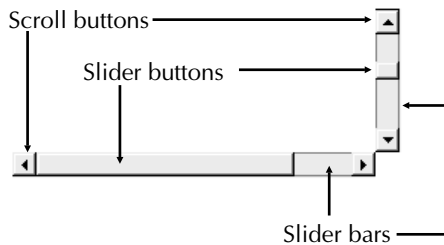
Figure 3-2.



It's a good idea to experiment with scroll bars before going further. In the following exercise, you'll "shrink" the My Computer window to make the scroll bars appear, and then you'll experiment with them:

1. Point to the lower-right corner of the My Computer window, then click and drag inward to make the window smaller.
2. Release the mouse button. If scroll bars don't appear, repeat step 1 until they do. The right border and the lower border should overlap objects in the window.

The *vertical scroll bar* on the right scrolls the window contents up and down. The *horizontal scroll bar* at the bottom scrolls the window contents left or right. Each scroll bar consists of *scroll buttons*, a *slider button*, and the *slider bar*, as you see here:



You can use the following techniques to scroll:

- ⇒ Click *scroll buttons* repeatedly, or click and hold the mouse to continuously scroll.
- ⇒ Click and drag the *slider button* to scroll long distances.
- ⇒ Click in the *slider bar* to scroll one window-view at a time. (The slider bar is that part of the scroll bar that does not include the scroll buttons and slider button.)

The scroll bar and the slider button have a unique relationship. Together, they give you an idea of the length of your document and the how much of it is shown in the window-view. Two examples are shown here:



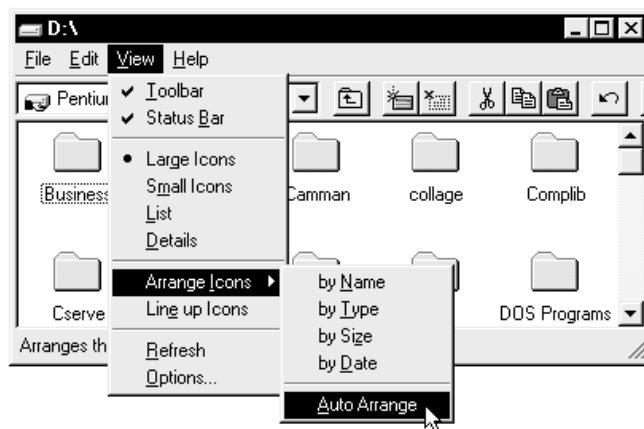
The size of the slider button on the left indicates that you are seeing most of the window, while the smaller slider button on the right indicates that you are seeing only about one-fifth of the window contents.

Auto-Arranging Window Contents

By now you must have noticed that some objects get obscured when you reduce the size of a window and that scroll bars appear when all objects can't be seen at once. For cases where there are only a few objects in the window, you can use the Auto Arrange feature to make objects automatically arrange themselves to fit into windows. This way, scroll bars need never appear. You need to set this feature on by choosing Auto Arrange from the View menu, as described here:

1. Click View on the menu bar of the My Computer window. As shown in Figure 3-3, click Arrange Icons, and then choose Auto Arrange from the cascading menu.
2. Try resizing the window into a variety of shapes. First make it larger so you can see more objects, then make it wide, and finally make it narrow.

Once the Auto Arrange feature is on, the contents of the window are automatically rearranged every time you resize the window. Note that you'll need to turn on this feature for any window that you want to automatically rearrange, but once the feature is set, Windows 95 will remember the settings the next time you open the window.



Activating the Auto Arrange feature

Figure 3-3.

Removing Scroll Bars

As mentioned, scroll bars aren't always necessary and they make windows larger than they need to be. If a window has only a few objects, you can find its optimal size so the contents fit without scroll bars appearing. Here's how to obtain an optimal window size for the My Computer window:

1. Make sure the Auto Arrange feature is set on as described in the previous section.
2. Click and drag the lower-right corner of the window outward just a little, then release the mouse. Keep doing this until the scroll bars disappear.
3. After the scroll bars disappear, you can usually adjust the window border back in just a little, but make sure you don't cover any objects with a border.

Some windows have too many objects to completely remove one set of scroll bars. However, with Auto Arrange set, you can usually manage to get rid of either the horizontal or vertical scroll bar, depending on whether you resize the window in a wide or narrow format.



Tip: It's worth your time to optimize the size of windows on your desktop. Desktop space is a valuable commodity in a windowing environment like Windows 95.

Keyboard Techniques for Navigating Windows 95

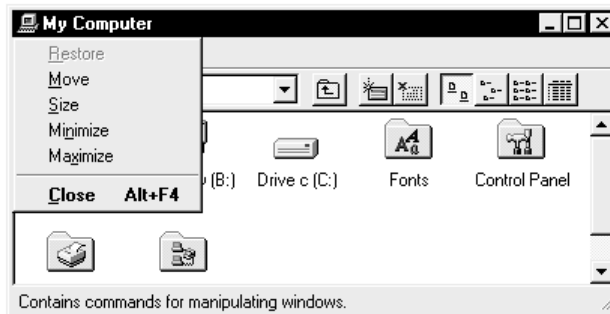
The keyboard provides another way to access features of Windows 95. You can use it in place of the mouse to navigate the window system. Pressing keys is not as elegant as clicking the mouse, but you can access every Windows feature from the keyboard. In fact, some people prefer the keyboard over the mouse, because pressing a key is often much quicker than grabbing and moving the mouse.

You might be forced to use the keyboard. I once completely disabled my mouse while experimenting with a different mouse setting. I had to use keyboard techniques to get into the mouse setup section of the Control Panel so I could restore the correct mouse settings. After rebooting the computer, everything worked fine.

Here are the basic keyboard techniques for accessing the Windows 95 interface. For more information, look up "keyboard" in the help system and

print the topic, or photocopy this page and tape it next to your computer. Try some of these keyboard techniques to see if you prefer them over using the mouse.

- ⇒ Press ALT-TAB or ALT-ESC to jump between windows.
- ⇒ Press the arrow keys to move among objects in a window or on the desktop.
- ⇒ Press ENTER to open a window or start a program
- ⇒ Press TAB to move between fields in open windows or dialog boxes.
- ⇒ If a window is open, press ALT-SPACEBAR to open its Control menu, as shown here:



The Control menu has options for manually moving, sizing, minimizing, maximizing, and closing a window. Just type the underlined letter of the option you want to choose. If you choose Move, a four-headed arrow appears in the window's title bar, as shown here:



Press an appropriate arrow key to move the window in the direction you want, then press ENTER.

Resizing a window using the Control menu Size option is a two-step process. You first choose Size on the menu, then you press an arrow key to indicate which window border you want to move. Finally, you press the appropriate arrow key to move the border you selected. Press ENTER when you've resized the window.

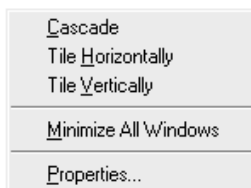
Arranging Windows on the Desktop

When several windows are open on the desktop, you can switch among them by pressing ALT-TAB or ALT-ESC. In some cases, however, you'll prefer to arrange your desktop so you can see all the windows at the same time. When windows are placed side by side, you can copy information from one window to another, or compare the contents of different windows.

There are two ways to organize windows so you can see all of them. First, you can manually resize and move windows using the techniques described earlier. But that might be a lot of work. The second method is to have Windows 95 automatically resize and arrange your windows.

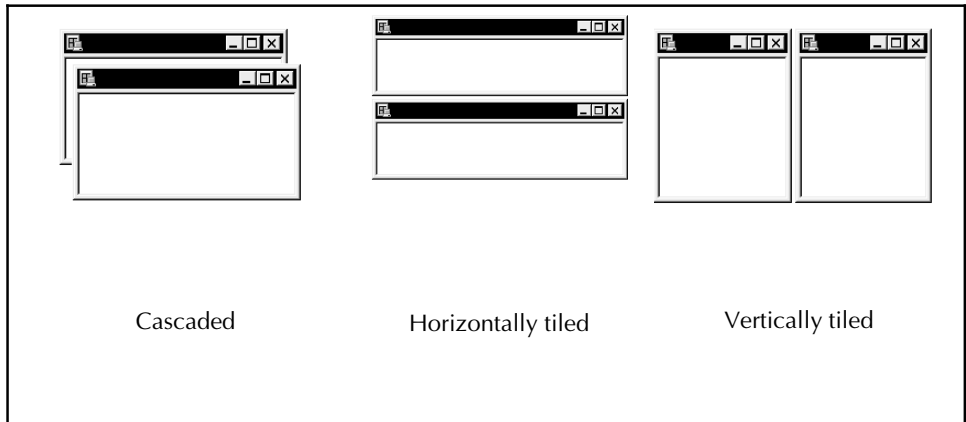
To see how this works, you'll open the Windows 95 Paint and WordPad programs, then arrange them in several different ways:

1. Close any open windows by clicking the X button in the upper-right corner of the window.
2. Start Paint by clicking the Start button, then choosing Programs, Accessories, and Paint.
3. Start WordPad by clicking the Start button, then choosing Programs, Accessories, and WordPad.
4. Click a blank portion of the Taskbar with the right mouse button to display the following menu:



5. Choose Cascade to arrange the open windows one on top of another in a cascade arrangement, as shown on the left of Figure 3-4. The cascade arrangement lets you see the title bar of each window so you can quickly click a title bar and get to the window you want to work with. Another trick is to click the Maximize button of the window you want to work with, then work in the window in its full-screen size. When you're done, you click the Restore button to restore the window to its original cascade arrangement.
6. Right-click the Taskbar, then choose Tile Horizontally to place windows one on top of the other, as shown in the middle of Figure 3-4. This arrangement is good for comparing paragraphs of text or listings of files.

Window
arrangement
Figure 3-4.



7. Right-click the Taskbar, then choose Tile Vertically to place windows side by side, as shown on the right side of Figure 3-4. This arrangement is useful when moving objects from one window to another.
8. Choose Minimize All Windows to clear the desktop. All windows are minimized and appear as buttons in the Taskbar.

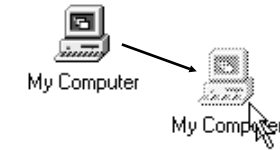


Note: The Cascade option and the two tile options change the size of windows. You have to manually resize windows if you want to return them to the custom size you previously set.

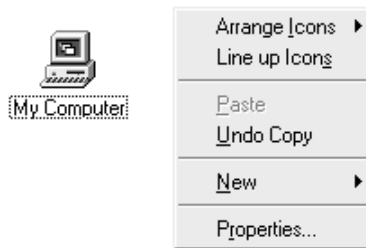
Arranging Objects on the Desktop

You've learned how to move, resize, minimize, and maximize windows on the desktop. These techniques will help you organize windows as you work with Windows 95. You can also organize objects (icons) on your desktop. For example, try the following exercise:

1. Click the My Computer object with the left mouse button and drag it to another part of the desktop. You'll see a shadow object like the following appear as you drag:



2. Release the mouse button to reposition the object.
3. Click with the right mouse button on a blank portion of the desktop to display the desktop menu shown here:



4. Choose Line up Icons to arrange the object horizontally along an invisible grid.
5. Right-click the desktop again, but this time click Arrange Icons. Choose By Name from the cascading menu. Now the objects are arranged in alphabetical order, starting at the upper-left corner.

Every open window on the desktop has similar options for organizing the objects within it. You access these options by opening the View menu or by clicking buttons on the toolbar.



Tip: You can ensure that objects are kept in a permanently arranged state by choosing Auto Arrange. Right-click the desktop, then click Arrange Icons and choose Auto Arrange from the cascading menu. Now whenever you move an object, it will be automatically rearranged.

More About the Taskbar

You can change the properties of the Windows 95 Taskbar. To do so:

1. Click the Taskbar itself with the right mouse button. The following menu appears:



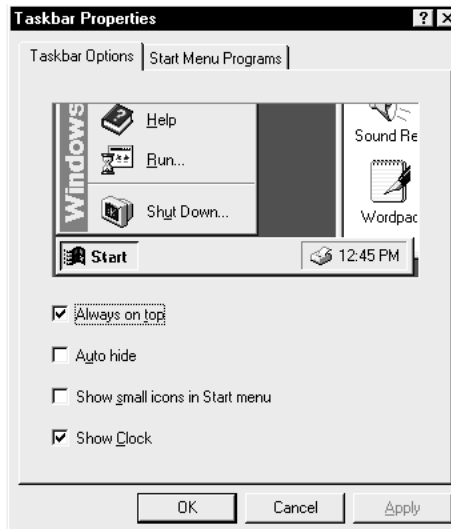
2. Choose Properties to display the Taskbar Properties dialog box, as shown in Figure 3-5.
3. Click the Taskbar Options tab if it is not already selected and change the properties of the Taskbar.

Here are the options on the Taskbar Options tab:

- ⇒ **Always on top** When this option is selected, you see the Taskbar even when you're working in a window that is fully maximized. Being able to see the Taskbar is probably only useful if you're switching a lot between applications. Otherwise, the Taskbar will probably just be in the way of your full-screen application most of the time.
- ⇒ **Always on top and Auto hide** If you enable *both* Always on top and Auto hide, the Taskbar is hidden when you work in maximized applications, but quickly pops to the top when you point to a corner with the mouse.
If you *disable* Always on top but *enable* Auto hide, other application windows on the desktop will overlap the Taskbar. If you're working in a maximized window, you'll have to minimize the window to see the Taskbar, or press ALT-ESC, ALT-TAB, or CTRL-ESC to switch between windows.
- ⇒ **Show small icons in Start menu** Enable this option to make the icons on the menu smaller and thus reduce the size of the menu itself. I personally see little reason to disable this option.
- ⇒ **Show Clock** If this option is enabled, the clock appears in the lower-right corner.

You should experiment with the Always on top and Auto hide options until you find an arrangement you are comfortable with. Personally, I like having

The Taskbar Properties dialog box
Figure 3-5.



the Taskbar on top so I can watch the clock! If you are just learning about Windows 95, leave the settings as they are (Always on top enabled and Auto hide disabled) until you get a little more comfortable with the system.

The tab called Start Menu Programs in the Taskbar Properties dialog box (see Figure 3-5) is where you go to add new program startup options to the Start menu. You'll learn how to do this in Chapter 5. In the next chapter, you learn more about starting programs, running programs, and working with documents.



T ip: You can click and drag the Taskbar to the top or sides of the desktop. Try it!

Now that you know the basics of the Windows 95 interface, you're probably anxious to run some programs and get some work done on your system. This chapter shows how to start programs and how to open and work with documents. You'll also learn how to open, save, and print documents you create with applications.



Note: This is an important chapter because it describes basic techniques you'll use when working with many different Windows applications. You only need to learn these techniques once, so dedicate some time to working through the examples.

Running Programs

The normal way to start a program is to click the Start button, click Programs or another menu option, and choose the program's name on a menu—but not all programs are listed on the Start menu. Alternative methods for starting programs and opening documents are discussed here to help you understand the inner workings of Windows 95 and its file system:

- ⇒ One alternative method for starting programs is to browse through the folder hierarchy of your computer's filing system until you locate the program you want to start.
- ⇒ Another method is to create special icons on the desktop called *shortcuts* that you can double-click to start a program.
- ⇒ Yet another method of opening a program is to simply double-click a document you want to work with. The document then loads in the workspace of the program that you used to create it.

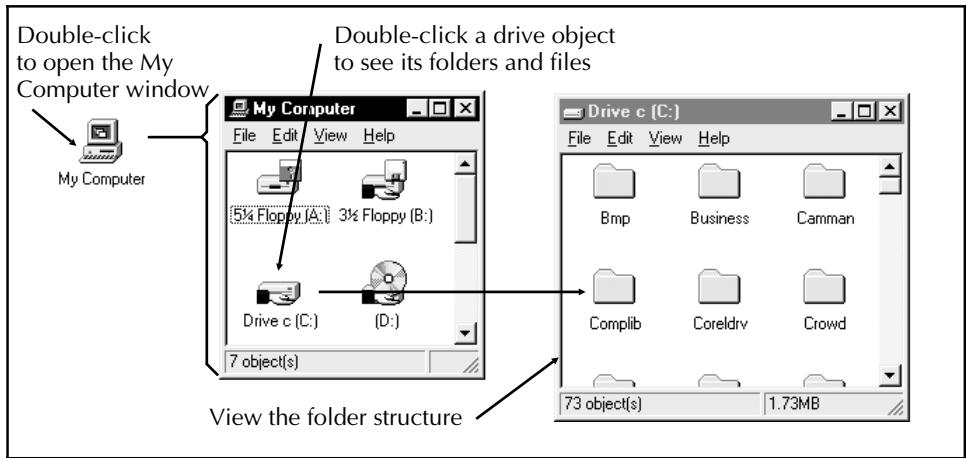
These and other techniques are discussed in greater detail here.

Browsing Drives and Folders to Start a Program

You can browse through your computer filing system to locate a program, then double-click the startup object for the program to run it. As shown in Figure 4-1, the My Computer window is the starting point for this kind of search through the disk and folder structure. You double-click a drive to see its folder structure, then look in the folders for programs and files.

Try the following technique to open the Windows 95 Paint program. Recall that you can start Paint by clicking Start, then Programs, and opening the Accessories menu. For this example you'll see how to find the program in its home folder and start it from there. This exercise will also help you identify the folder that holds Windows programs and files.

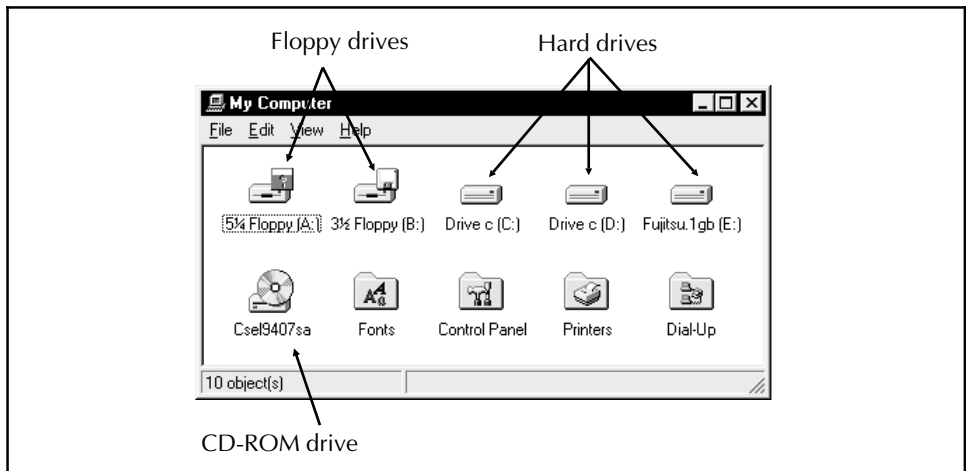
Opening a program by browsing through drives and folders
Figure 4-1.



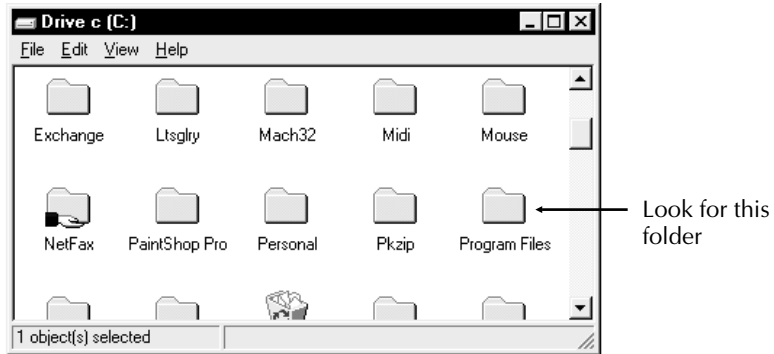
First, you need to locate the drive and folder where the Paint program is located. It is in a folder called Program Files, on the same drive as your Windows folder and files. The Windows folder holds all of the Windows program files and the Program Folder holds another folder called Accessories where the actual Paint program and WordPad program are stored (unless someone rearranged your folders). These folders are probably located on your C drive, but might be on other hard drives. You might need to open more than one drive before you find them. Follow this procedure:

1. Double-click the My Computer object on your desktop. You'll see the familiar My Computer window that holds the drive objects for your system. Figure 4-2 shows the drive objects for my system.

The My Computer window with the system's drive objects
Figure 4-2.



2. Double-click the first hard drive for your system. It has the label [C:] in its name.
3. When the drive C window opens, scroll through the window until you locate a folder called Program Files, as shown here:



(If you can't find it, the Program Files folder is located on another drive. Repeat step 2 and this step until you locate the folder, then write down the name of the drive for future reference.)

4. Once you locate the Program Files folder, double-click it to open its window.
5. When the window opens, you see the Accessories folder. Double-click the Accessories folder to open it.
6. In the Accessories folder window, you see the Mspaint object. Double-click the object to start the Windows Paint program.

The Paint program opens in a window on the desktop. As you can see, browsing through drives and folders is just another method for starting programs. I admit this technique is tedious, but it does point out where programs are located and how you can start them.

We'll access the Accessories window later in this chapter when working some other exercises. Minimize the Accessories window for now, then close all the other windows by clicking the X button in their upper-right corners.

Shortcuts for Starting Programs

If you thought the last exercise was a lot of work just to start a program, you're right. That's because we had to open a lot of windows to find the program. Those windows then cluttered the desktop. Wouldn't it be easier if you could just drag the Paint object out of the Accessories folder and put it

right on your desktop, then start the program from the desktop every time you want to use it?

That's exactly what you can do with the shortcut feature in Windows 95. Think of a shortcut as a "turbo-charged" way to start a program, open a document, or access other Windows 95 features. When you create a desktop shortcut, it appears as an object right on the desktop, next to other objects like My Computer and Network Neighborhood. You can also put shortcut in folders, but for now we'll concentrate on putting shortcuts on the desktop.

Let's create a shortcut that you can use to start the Paint program. Since you still have the Accessories folder open, this will be easy. To create the shortcut, you right-click and drag the Mspaint object out of the Accessories folder and onto the desktop.

1. Click the Accessories button on the Taskbar to reopen the Accessories folder window.
2. Click the object called Mspaint with the right mouse button, hold the mouse button down, and drag it out onto a blank portion of the desktop.
3. Release the mouse button. The following menu appears:



4. On the menu, choose Create Shortcut(s) Here.

Now you see a new object on your desktop called Shortcut to Mspaint. You can double-click this object at any time to start the Paint program.

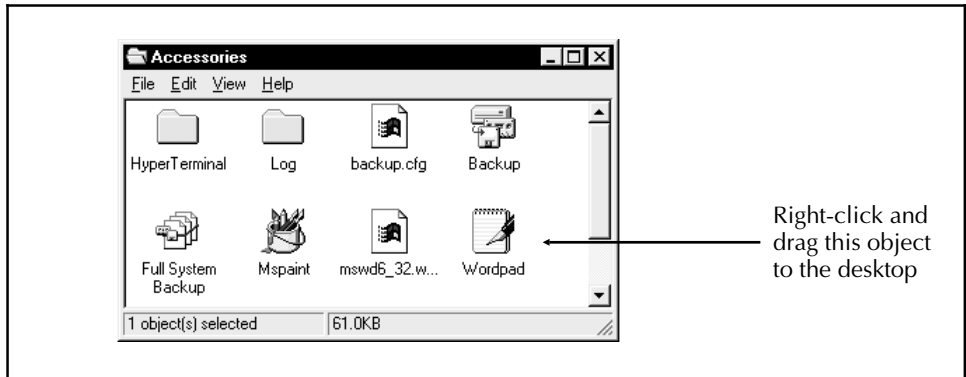


Note: Consider for a moment what you've just done. You created a shortcut object on the desktop that provides the fastest way to start Paint. It's even faster than clicking the Start button and opening all those cascading menus. Now that you know this trick, you can start planning which programs you'll want to put on your own desktop. You'll learn tricks for organizing your desktop in Chapter 6.

As long as the Accessories folder is open, create a shortcut for the WordPad program as well:

1. Locate the object called WordPad as shown in Figure 4-3.

The WordPad object in the Accessories folder window
Figure 4-3.

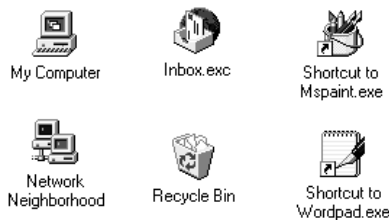


2. Click it with the right mouse button, hold the button down, and drag the object to a blank portion of the desktop.
3. Release the mouse button and choose Create Shortcut(s) Here from the menu that appears.



Tip: After adding new objects to the desktop, you can arrange them by name. Right-click a blank portion of the desktop, then choose Arrange Icons and By Name on the menu that appears.

Your desktop should look something like the following by now:



You'll see this new arrangement every time you start Windows 95. Double-click on Shortcut to WordPad to start WordPad. Easy! No more fumbling through the Start menu options or folder windows to start these programs. Sure, Microsoft claims that the Start menu makes using Windows 95 easy, but the shortcut method is even better.



Note: Taking a shortcut off the desktop is easy. On the desktop, click on the shortcut object with the right mouse button and choose Delete from the menu. However, don't remove the shortcuts you just created because they'll come in very handy as you work with Windows 95.

At this point, close all the open windows on your desktop by clicking the Close buttons (the X) in their upper-right corners. I'll show you a few more tricks before we start looking at program features.

Starting Programs with the Run Option and Browse Dialog Box

You saw in Chapter 2 how to start the Windows Explorer by clicking the Start button, choosing the Run option, and typing Explorer in the Open field. Here are other reasons for opening the Run dialog box:

- ⇒ Use it as another method to start a program that is already installed on your computer, but doesn't appear as an option on the Start menu or as a shortcut on the desktop.
- ⇒ Use it to run a program called SETUP or INSTALL to install new programs on your computer. These programs are typically located on a floppy disk or a CD-ROM.

In the following illustration, I typed **A:SETUP** in the Run Application dialog box to start a setup utility located on a floppy disk in drive A:



Note: For information about installing programs, see Chapter 25.

When you don't know the name of a program or its exact location, you can click the Browse button in this dialog box and search the filing system. Try the following exercise to search for and start the Windows 95 Calculator.



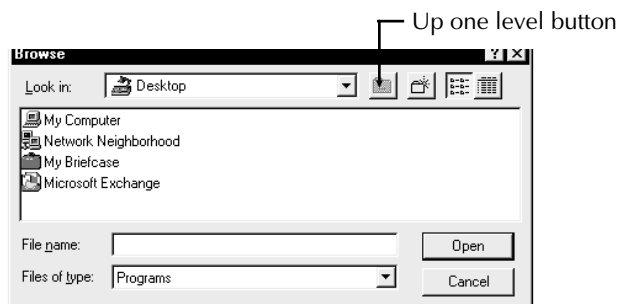
Note: This exercise demonstrates yet another way to look through the drives and folders of your file system. Notice the similarities between using the Browse dialog box and the techniques you used earlier to open and browse through drive and folder windows.

1. Choose the Run option on the Start menu.
2. Click the Browse button. You'll see a dialog box similar to the one in Figure 4-4. Notice that the window displays the same objects you see on your desktop. If it doesn't, click the Up one folder level button on the toolbar until you see the word "Desktop" in the Look in field.
3. Click the down-arrow on the Look in field to display the following drop-down menu:

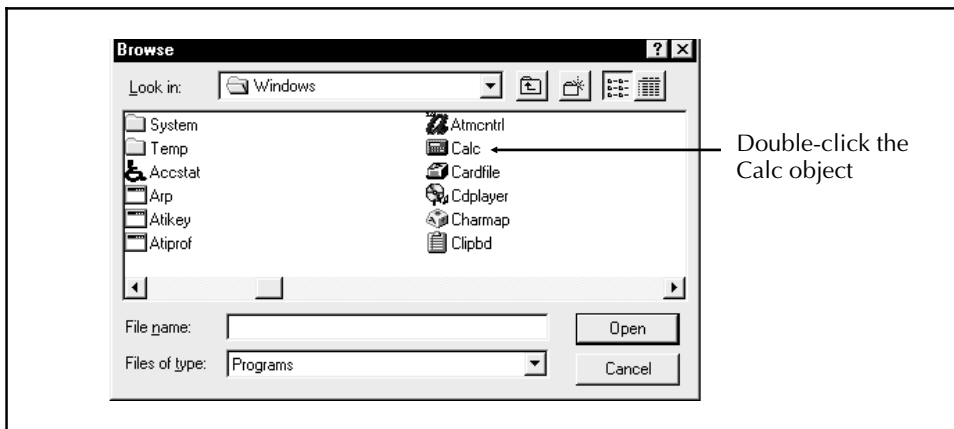


4. Double-click the drive where your Windows folder is located (usually drive C). Now the Browse dialog box shows a list of folders located on drive C.
5. Scan through the list until you locate the Windows folder, then double-click it. Your Browse dialog box now shows the folders and program files in the Windows folder, similar to Figure 4-5.

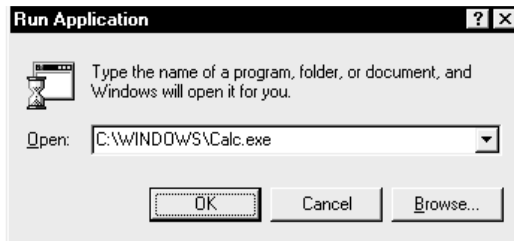
The Browse dialog box
Figure 4-4.



The Browse dialog box with the contents of the Windows folder displayed
Figure 4-5.



6. Look for the Calc object and double-click it. If you don't see it, scroll to the right until it comes into view. The Run Application dialog box reappears as shown here. The drive, folder name, and name of the program you want to start appear in the Open field:



7. Click OK to start the Windows 95 Calculator.

Cool Tricks

The previous procedure demonstrates another way to browse the filing system and look for programs or documents you want to run. If you use the Calculator often, you can create a shortcut for it on the desktop or you can add it to the Start menu. Try both of the techniques described below.



Note: Both of these techniques demonstrate an interesting trick: you can click and drag objects out of a browse dialog box in the same way you can click and drag them out of a folder window!

- ⇒ To create a shortcut for the calculator on the desktop, follow steps 1 through 4 above. When you find the Calc object in the Browse window, right-click it and drag it to the desktop. Click Create Shortcut(s) Here to create the shortcut.
- ⇒ To add the calculator to the first level of the Start menu, follow steps 1 through 4 above. When you find the Calc object in the Browse window, right-click it and drag it over the Start button to add it to the menu.

Now you can start the calculator by double-clicking the Calc shortcut object on the desktop, or by choosing Calc from the Start menu. This is a really cool trick because it lets you quickly add programs you use often to the Start menu. Later you'll learn how to remove from the Start menu the programs you've added that you don't use very often.

Opening Documents

So far, we've looked at methods for starting programs. But what about the documents you create with the programs and save to disk? There are two ways to open documents you've created:

- ⇒ You can start the program you used to create the document, then open the File menu and choose Open to open a document in its workspace.
- ⇒ You can locate the document's object in a folder window, then double-click the document object to both start the program and automatically load the document in its workspace.

Opening a Program and Document at the Same Time

The second method mentioned above is of interest here and is an extremely useful technique for working with documents. For example, if you work with the same set of documents on a daily basis, you should try to save them in a folder called "Project X" or some similar name. Then you can open that folder and double-click any of the documents you want to work with. If you access a document frequently, you can even create a shortcut for it on the desktop.

The following exercise shows how to preview and open documents. For this exercise, you'll open sample documents that come with Windows 95.

1. Double-click the My Computer object to open the My Computer window.
2. Double-click the drive that contains your Windows 95 files (usually drive C), then scroll through the folder list until you find the Windows folder.

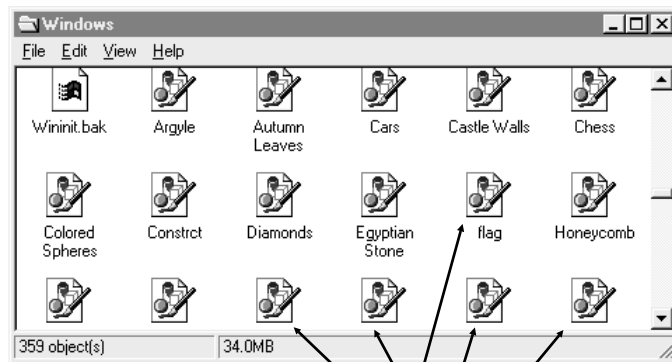
3. Double-click the Windows folder to open it.
4. When the Windows folder opens, change the way the files are listed by choosing Arrange Icons on the View menu, then clicking By Type. Now all the Paint, WordPad, and other similar documents are grouped together.
5. Scroll through the list until you get to the group of files with the Paint icon. They will be near the bottom of the listing and are shown in Figure 4-6.
6. Double-click any Paint document. Paint starts and loads the document in its workspace.

Take notice of a few things in this exercise. First, you opened a particular folder to access a set of documents. Then you changed the listing method so that documents of the same type were listed together and you could quickly find the document you wanted to open. In later chapters, you'll create new folders to help organize similar documents into common folders.

The Quick Viewer for Seeing What's in a Document

You can use Windows 95's Quick Viewer to view the contents of a document without loading the application you used to create it. The Quick Viewer saves time because some applications take a while to load. Quick Viewer is useful when you are trying to find a particular file or see what's in a file before you move or delete it.

Searching for icons in the Windows folder window
Figure 4-6.



Paint documents have this icon

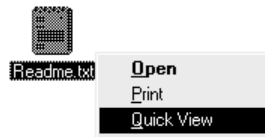
To “quick-view” the document called Readme in the Windows folder, follow these steps:

1. Your Windows folder should still be open from the last example. If it isn't, open it now as discussed earlier.
2. Choose Arrange Icons on the View menu, then click By Name to arrange the icons in name order.
3. Scroll through the list of files until you locate the Readme document.

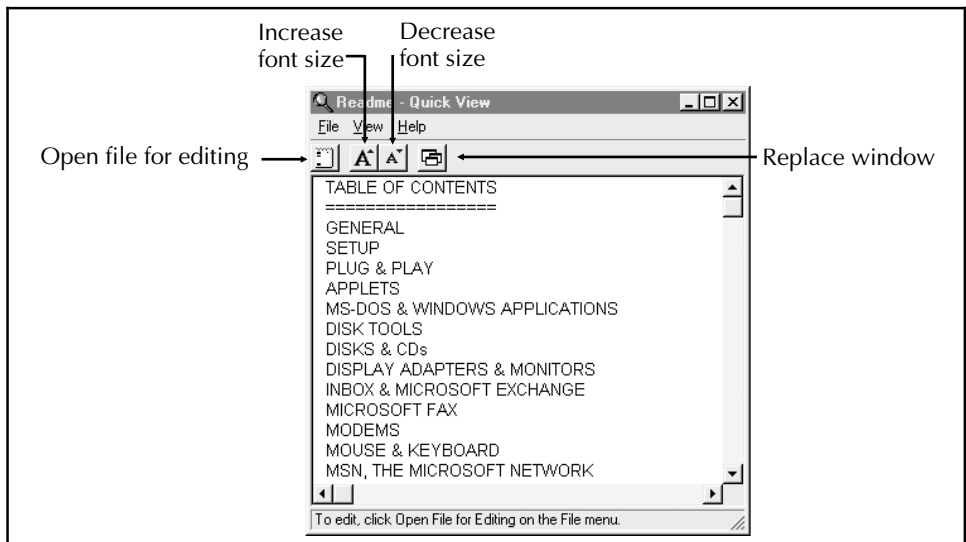


Tip: To quickly scan through the list of files in the window, click and drag the scroll bar button until you get to the “R” files in the alphabetical listing.

4. Click the Readme file with the right mouse button to display the following menu:



5. Choose Quick View on the menu to display a window similar to the one shown in Figure 4-7.



Quick-viewing
a document
Figure 4-7.

In the Quick Viewer, you can't do much in the way of editing or formatting, but you can change font sizes to make text easier to read. If you want to edit the document you're viewing, click the Open as a File button, the leftmost button on the toolbar.

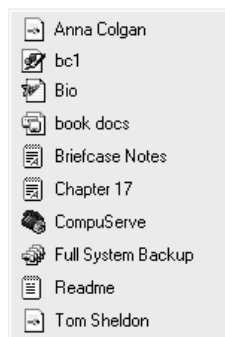


Note: The Quick Viewer may not work fast the first time you open it, but all subsequent quick views should appear quickly once Windows 95 loads the Quick Viewer utility in memory.

In the Quick Viewer, you can choose Print from the File menu or an option called Small View from the View menu. Small View displays the contents of the document on a page. You won't see much detail in this view, but it does provide a good overview of a document's layout. The Small View option is useful if the document contains graphics.

Opening Documents You've Recently Worked With 4

There's a quick way to open documents you recently had open: Choose Documents on the Start menu. You'll see a cascading menu similar to the following, with the documents you opened recently displayed on the menu. Just click the one you want to open:



Note: Not all applications update the Documents menu, so you may not see all your recently opened documents listed there.

Running DOS Applications

This section is for readers who have older DOS programs and need to run those programs under Windows 95. DOS (disk operating system) is a text-based operating system that is now considered out of date. (Windows 95 is a graphical user interface operating system.) However, some people consider DOS's text-based command structure a useful alternative to Windows 95 for executing some commands. DOS is also essential if you need to run programs that were written for DOS, not Windows.

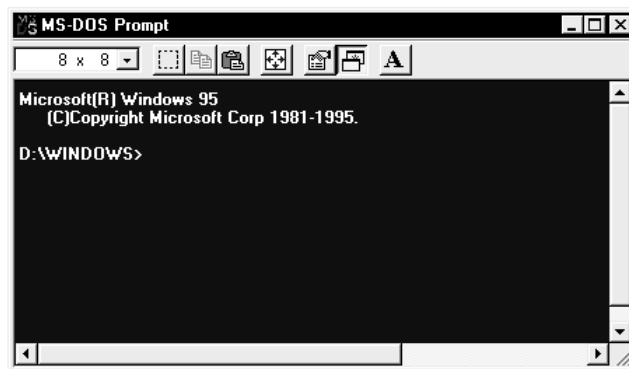


Note: If you don't have DOS applications or you don't need to use DOS commands, you can skip to the next section.

To access the DOS prompt, choose Programs on the Start menu, then choose MS-DOS Prompt on the Programs cascading menu. In a moment, a window similar to the one in Figure 4-8 appears. It's also possible that DOS will appear full-screen, rather than in a window. You can press ALT-ENTER to switch to window mode.

A blinking cursor appears next to the "command prompt." This is where you can type and execute DOS commands such as DIR, CD, COPY, and DELETE. Refer to a DOS manual or the Windows Help system for more information on these and other DOS commands.

The toolbar on the DOS window provides buttons for copying and pasting information, changing the size of the window, and changing the font of



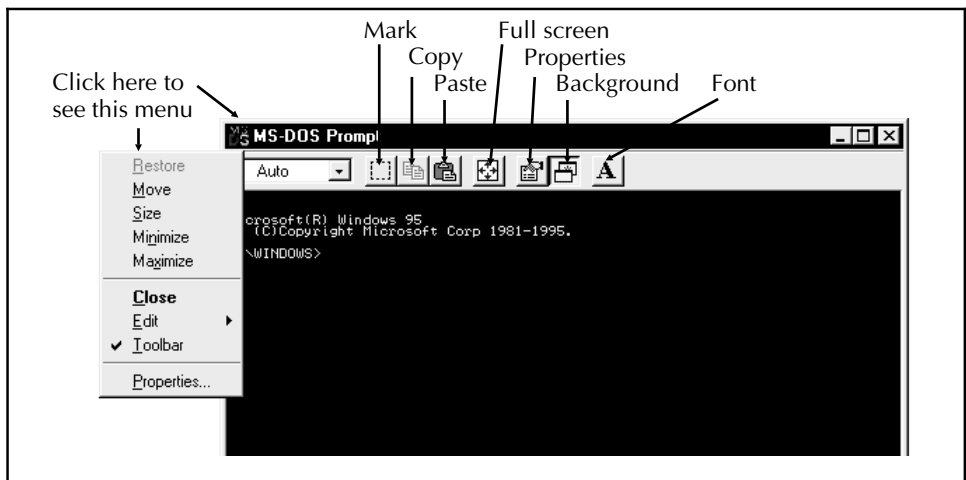
Running a
DOS program
in Windows 95
Figure 4-8.

letters in the window. If you don't see a toolbar, click the icon in the upper-left corner of the window, then choose **Toolbar**, as shown on the left side of Figure 4-9. The other options on this menu, such as **Edit** and **Properties**, are available as buttons on the toolbar.

Here's a description of what each button on the toolbar does:

- ⇒ **Font size selector** Determines how big the MS-DOS window is and how big the type in the windows is as well.
- ⇒ **Mark** Mark text that you want to copy elsewhere. After clicking the Mark button, you click and drag across the text you want to select, then click the Copy button.
- ⇒ **Copy** Click this button after marking text. The text is copied to the Clipboard, which is an invisible and temporary storage place. Once copied there, you use Paste to place the text elsewhere.
- ⇒ **Paste** Pastes the text on the Clipboard to the current cursor location, whether that is in the current window or another window.
- ⇒ **Full screen** Expands the MS-DOS window to full-screen size. Press ALT-ENTER to return to window size.
- ⇒ **Properties** Displays the Properties dialog box, which lets you customize the settings of the MS-DOS window or the DOS applications running in it. Refer to Chapter 25 for more information.

4



Working with
DOS programs
Figure 4-9.

- **Background** Runs the application in the background. This is the default mode. It allows Windows 95 to process applications in other windows in addition to the program in the MS-DOS window.
- **Font** Click this button to set a custom font and window size. The dialog box shown in Figure 4-10 appears. Choose a different font type in the Available types field, then choose a different font size in the Font size field. You'll see examples of the new window size and font in the lower windows.

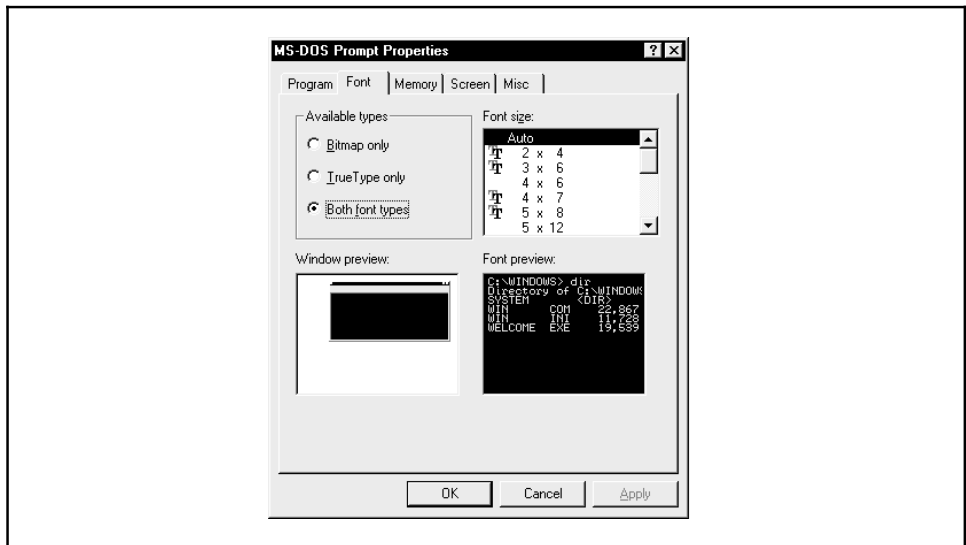


Note: For more information on running DOS applications, see “Working with DOS Programs” in Chapter 25.

Using Common Program Features

At this point, if you've read all the way through from Chapter 1, you should be quite familiar with the basic operating procedures of Windows 95. You're

Customizing
the look of the
DOS window
Figure 4-10.



probably anxious to start using programs, so in this section you'll see how to perform basic tasks that are common on many Windows 95 applications.



Note: The section discusses techniques for saving and printing files on your computer. You can also open or save files on other computers if your computer is connected to a network. Refer to Chapter 14 for more details.

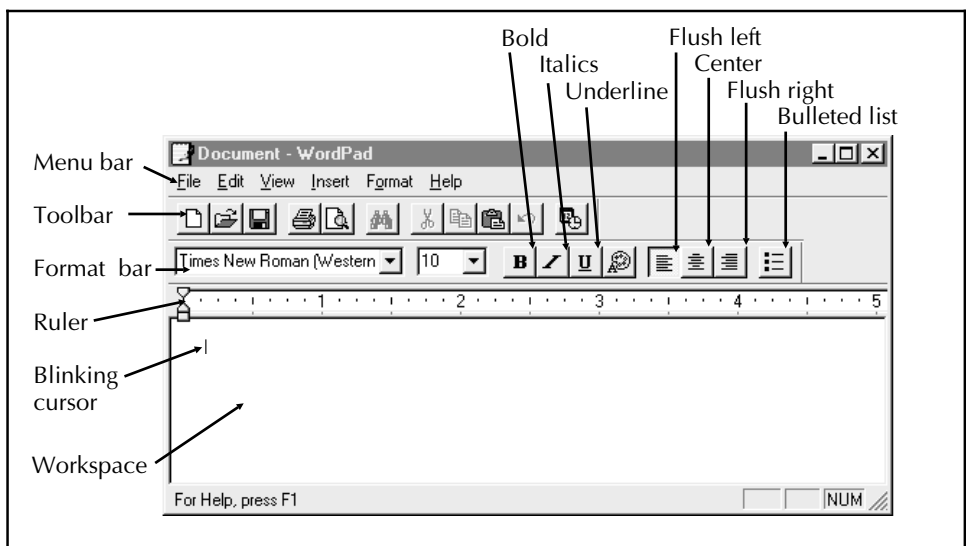
Editing 101

All Windows 95 applications require the same editing techniques, the most important of which are pointing and clicking where you want to work, and selecting and moving blocks of data by clicking and dragging. Once you've selected a block of data, you can move it, copy it, format it, or delete it.

In this section, we'll experiment with editing techniques and create a document that you'll work with later in this book:

1. Open the WordPad application by double-clicking its shortcut on the desktop. (You created this shortcut earlier in this chapter.) The WordPad window appears, as shown in Figure 4-11. In the figure, there is a description for each feature to help you get oriented. You'll learn more about WordPad in Chapter 10.

4



The WordPad window
Figure 4-11.



Note: If the toolbar, format bar, ruler, or status bar are not visible, open the View menu and choose the option you want to see.

2. The blinking cursor indicates your current position in the text. Type the following line:

This is a normal line of text. The cursor automatically jumps to the next line when it reaches the right margin.

3. As you type, the cursor moves to the right. Press the ENTER key twice to end the sentence and create a blank line, then type the following:

The font is Times New Roman

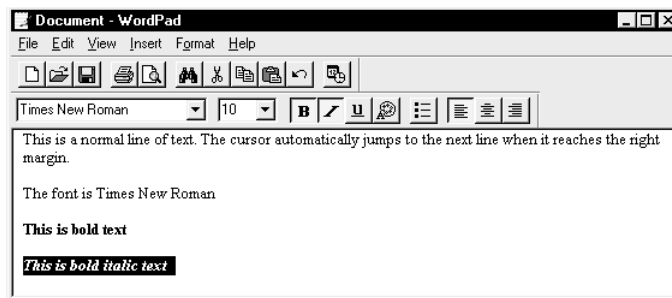
4. Press the ENTER key on the keyboard a few more times, then click the Bold button in the format bar and type the following:

This is bold text

5. Press the ENTER key twice to create another blank line. Now let's try something tricky.
6. Move the mouse pointer just to the left of the word "This" in the sentence you just typed. The arrow changes and points to the upper-right. Click the left mouse button. This highlights the entire line.
7. Click the Copy button in the toolbar to put a copy of the text on the Clipboard. Now you can paste this text elsewhere.
8. Click below the line you just typed, then click the Paste button on the toolbar. The text is pasted in at the cursor position.
9. Click just before the word "text" in the sentence you just inserted and type **italic**.
10. Highlight the entire sentence as you did in step 6, then click the Italics button on the toolbar. Your screen should now look similar to the one in Figure 4-12.

Notice that the line is formatted to display both italic and bold text. These are basic editing techniques for positioning the cursor, formatting data, and copying data from one place to another.

Basic editing
and formatting
in WordPad
Figure 4-12.

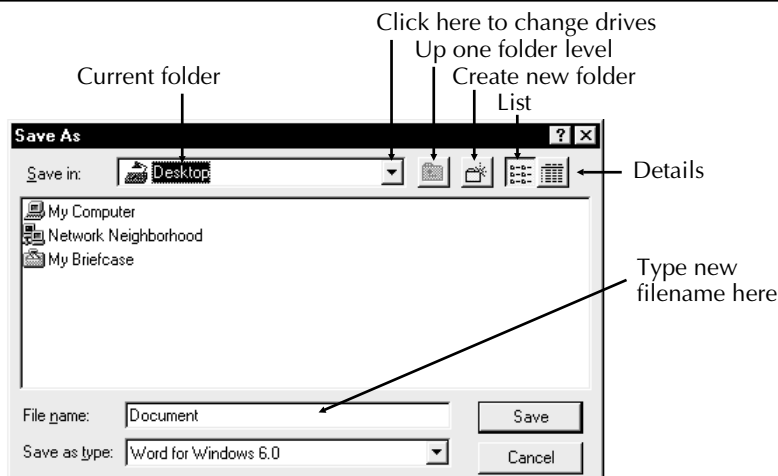


Saving Documents

We'll work with the WordPad document you just created in this chapter and future chapters, so it's a good idea to save it before going further. By default, WordPad suggests saving files in the Windows folder. In this exercise, you'll create a new folder called "Docs" and save the file you just created inside of it. Keep in mind that you'll use similar procedures in other Windows 95 applications to save files.

1. Choose Save As from WordPad's File menu. You'll see the Save As dialog box, as shown in Figure 4-13. Note that the contents of the large window will depend on the current drive and folder you are looking at.

The Save As
dialog box
Figure 4-13.

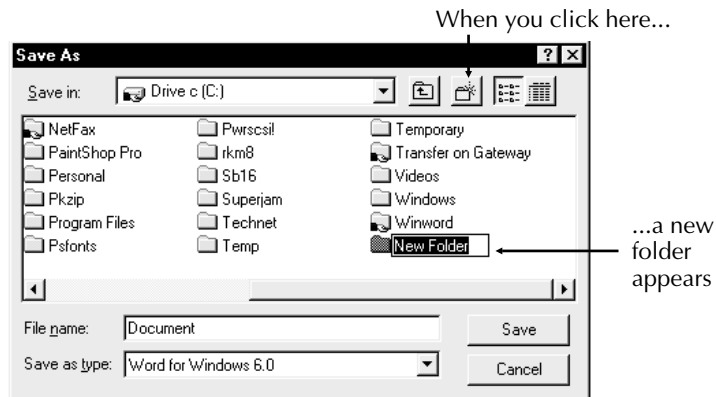


Notice the similarities between this box and the Browse dialog box you worked with earlier in this chapter. The desktop, or a folder (such as the Windows folder), may appear in your window. Let's create a new folder at the bottom level of your C drive in which to store our new file.



Tip: To get help on a dialog box feature, click the ? button, then drag the mouse over the feature and click the left mouse button.

2. Click the down-arrow button in the Save in field, then click Drive C in the resulting list. A list of folders at the root level of drive C appears in the window.
3. Now create a new folder at the root level by clicking the Create new folder button on the toolbar. A new folder appears, as shown here:



4. The name of the folder is highlighted, so you can simply type **Docs** and press the ENTER key to overwrite the name.
5. Double-click the new Docs folder to open it.
6. Double-click in the File name field, and then type **Sample.rtf**.
7. Click the down-arrow in the Save as Type field and choose Rich Text Format (RTF). This format saves the file and retains the formatting information.
8. Click the Save button to save the document.

The first time you save a file, you can choose Save or Save As. Either way, you see the Save As dialog box since you need to specify the filename for the first time. After you've saved a file the first time, you can choose Save from the file menu. The Save option assumes you don't want to change the name

or location of the file. Choosing it immediately saves the file with the name it already has.



T ip: In some cases, you'll want to edit an existing file and save it with a new name. Be sure to choose the Save As option in this case so you can rename the file. With the Save As option, you leave the original file intact and create a second copy for further editing.

Opening Documents

In most Windows application, the dialog box to open files looks similar to the Save As dialog box (see Figure 4-13) and the Browse dialog (see Figure 4-5). To see the dialog box for opening files, choose Open from WordPad's File menu now.

When you locate a file, double-click it with the mouse to open it. Meanwhile, here's how to use the features of the Open dialog box to find files you want to open:

- ⇒ To locate files on other drives, click the down-arrow on the Look in field, then double-click the drive you want to search.
- ⇒ To move up the folder hierarchy, click the Up one folder level button. To move down the folder hierarchy, double-click a folder in the large window.
- ⇒ You can change the way folders and files are listed by clicking either the List button or the Detail button on the toolbar. Detail view shows information on the file, including its creation date and size.
- ⇒ To list only specific types of files, choose a type in the File of Type field.
- ⇒ When you locate a file, double-click it with the mouse to open it.



T ip: The last few files you opened are listed on the lower portion of the File menu. To open one of these files, highlight it and release the mouse.

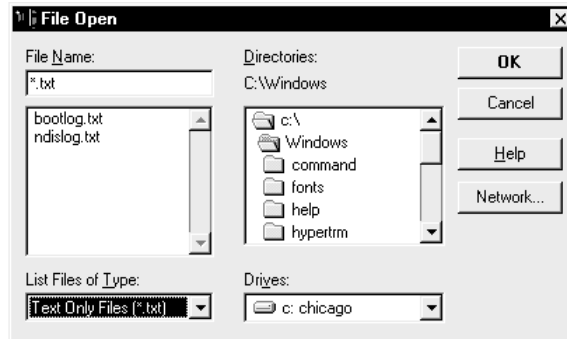
Experiment with the Open dialog box on your own. You can use it to browse through your filing system and locate files to load into WordPad's workspace. To cancel without opening a file, click the Cancel button.

Windows 3.1 Open and Save Dialog Boxes

If you are working with applications designed for Windows 3.1—and which have not been updated for Windows 95—you may see a dialog box similar to the one in Figure 4-14 when you choose Open or Save on the File menu.

The Windows 3.1 Open dialog box (the Save dialog box looks much the same)

Figure 4-14.



The Windows 3.1 Open and Save dialog boxes have the same basic features as their Windows 95 counterparts, but they are arranged differently. The usual procedure for using the Save or Open dialog box is as follows:

1. Choose a drive by clicking the down-arrow in the Drives field.
2. Choose a folder in the Directories field.
3. If necessary, change the types of files that are listed by choosing a different option in the List Files of Type field.
4. Double-click a file in the File Name field to open it.

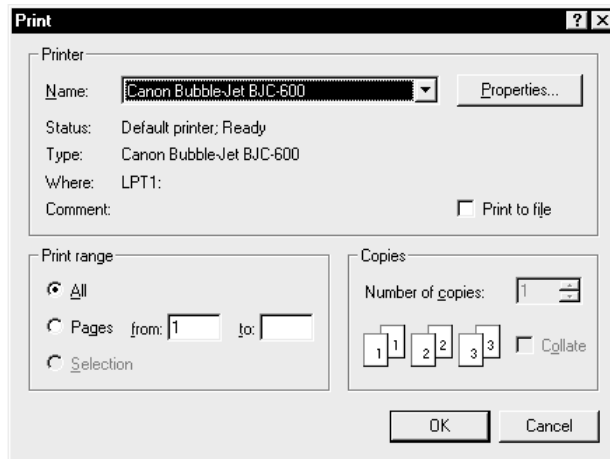
You can also type the name of the file you want to open in the File Name field. If the drive and directory are set right in the other fields, you can type the drive letter and path for the file you want to open. Click the Network button to look for a file on another computer in your organization.

Printing Documents

The basic technique for printing is simple. Once you've created a document, you choose Print from the File menu. A dialog box similar to the one in Figure 4-15 appears. This is where you can set various options for printing, but in most cases all you have to do is press the ENTER key or click the OK button to print your document.

Not all Print dialog boxes look like the one in Figure 4-15, but most have similar features. For example, you can specify a range of pages to print, the number of copies, and choose a print quality.

Printing a document in a Windows 95 program
Figure 4-15.



Note: Some printing options are quite advanced. For example, you can set special PostScript options for printing on sophisticated high-resolution film printers like the kind available at graphic specialty houses. These techniques are discussed in Appendix B.

You should still have the WordPad window open with the sample text you created in the previous section. If not, start WordPad and choose the Open option from the File menu to reload the sample document.

To print a document created with a Windows 95 program, follow these steps:

1. If you have multiple printers connected to your computer, click the down-arrow in the Name field to select a different printer.
2. In the Print range field, choose All to print the entire document, Pages to print a range of pages, or Selection to print a highlighted block of text. To use Selection, you must highlight the block of text you want to print before opening the Print dialog box.
3. In the Copies field, type the number of copies you want to print (or press the up-arrow in the spin box).
4. Click Collate if you want to collate the copies.
5. Click OK.

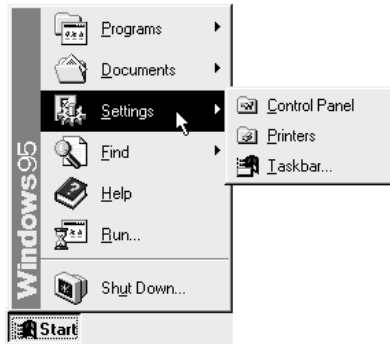


Note: The Properties button and the dialog box it displays are covered in Appendix B.

Now it's time to have some fun. In this chapter, you'll personalize your system by making interesting and useful changes to the Windows 95 settings. You can add colorful pictures to the desktop background, change the configuration of the screen, add options to the Start menu, change the keyboard settings, and change the mouse settings, among other things.

Where to Change Windows 95 Settings

Let's say you want a pink screen with green window borders and purple trimmings, or you're left-handed and need to reverse the functions of the mouse buttons. To make these system settings, just click the Start button, then click Settings. You see the following cascading menu:



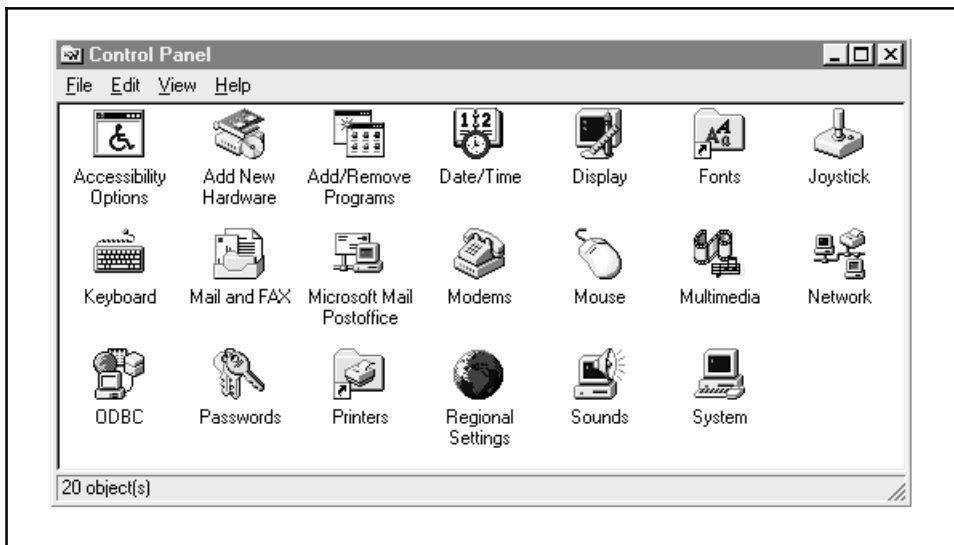
Here's a description of the options on the Settings menu:

- ⇒ **Control Panel** Utilities for changing hardware configurations or customizing the Windows 95 graphical interface.
- ⇒ **Printers** Opens the printer window so you can install a new printer or change the settings of a printer. See Appendix B for details.
- ⇒ **Taskbar** Choose this option to change the settings of the Taskbar. This is the same menu you see when you right-click a blank portion of the Taskbar and choose Properties.

Choose Control Panel on the Settings menu to open the window shown in Figure 5-1. You'll be accessing some of these options in the next few sections.

Before going further, let's clear up any confusion you might have regarding two Settings options, Control Panel and Printers, and

The Control Panel window
Figure 5-1.



similar options in the My Computer window. If you double-click My Computer, you'll see a window similar to the one in Figure 5-2.

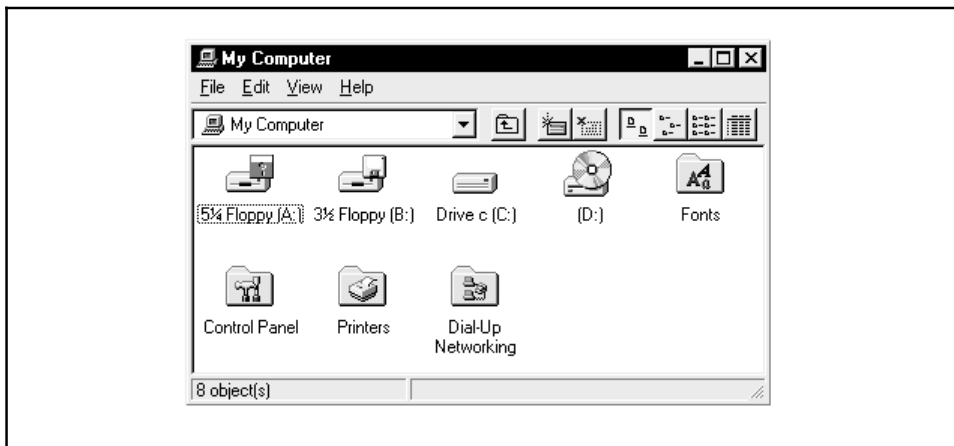
In the My Computer window notice the Control Panel and Printers folders. If you open them, you'll see the same windows you see when you choose Control Panel or Printers from the Settings menu. The point is, you can go to either place to make your changes. For now, close the My Computer window.

5



Tip: Windows 95 can accommodate all users, including those with physical disabilities. The Accessibility Options icon lets you customize Windows 95 for one-finger typing, for large easy-to-see

The My Computer window
Figure 5-2.



fonts, and for special sounds.



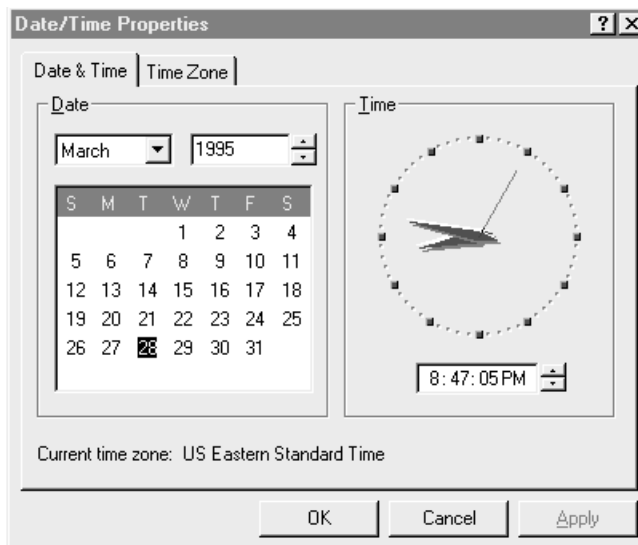
Date/Time

Changing the Date and Time

Let's start with the most obvious change you might need to make to your system—updating the time and date. Double-click the Date/Time object in the Control Panel window. In a moment, you'll see the Date/Time Properties dialog box shown in Figure 5-3.

Setting the date and time features on this dialog box is almost self-explanatory:

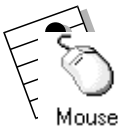
- ⇒ Click the down-arrow in the month field to choose the correct month.
- ⇒ Click the up- or down-arrow in the year field to choose the current year.
- ⇒ Click a day in the calendar.
- ⇒ Set a new time in the time field by clicking the up- or down-arrow or by clicking anywhere in the text and typing a new number.



The Date/Time Properties dialog box
Figure 5-3.

➡ To set the correct time zone, click the Time Zone tab. You'll see a map of the world. Simply click your current location on the map.

When you're done setting features on the dialog box, click the OK button to make the changes.



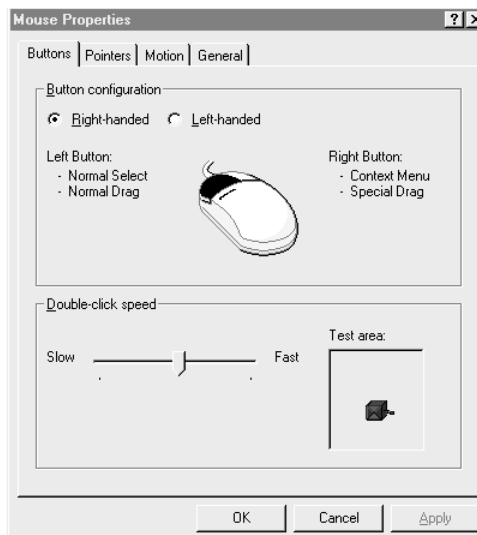
Tip: You can also double-click on the clock in the lower-right corner of your desktop to display the Date/Time Properties dialog box and change time settings.

Making the Mouse Work Just Right

You can change mouse settings by double-clicking the mouse

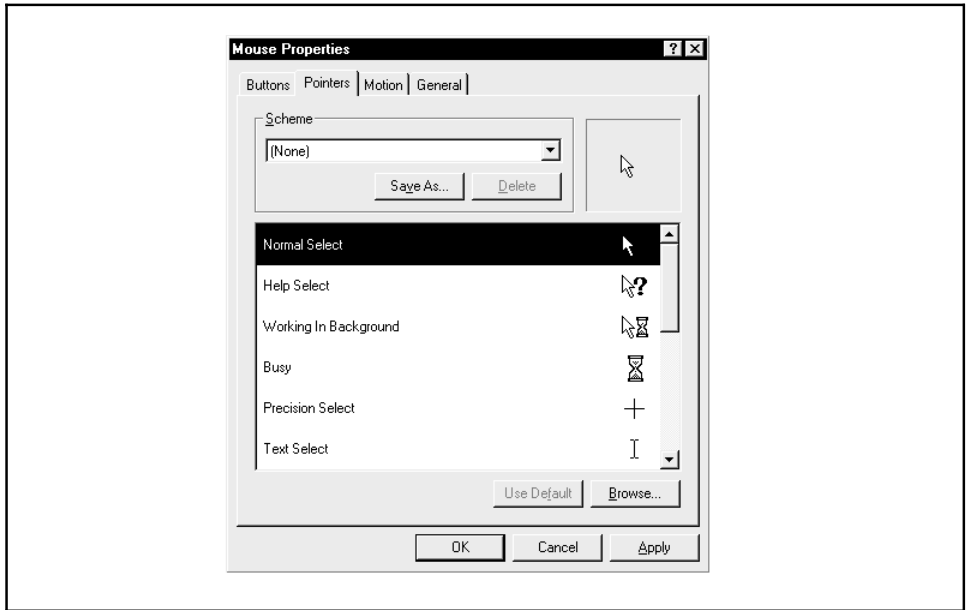
object in the Control Panel. The dialog box shown in Figure 5-4 appears. Notice that it has four tab sections—Buttons, Pointers, Motion, and General.

5



Changing the mouse settings
Figure 5-4.

Changing the
mouse pointer
settings
Figure 5-5.



Mouse Button Settings

The **Buttons** tab is where you lefties can go to change the mouse button settings. You also control double-click speed here. Click **right-handed** or **left-handed**, depending on which hand you use to hold the mouse. Adjust the double-click speed by moving the slider between **Slow** and **Fast**. Test your new double-click speed setting by double-clicking in the **Test** area.

Mouse Pointer Settings

Click the **Pointers** tab to display the **Pointers** dialog box shown in **Figure 5-5**. You see a list of mouse pointers that **Windows 95** displays when it is busy and working on something, or when you're working in a special application like a drawing program. You can change the pointers by opening special cursor files. You'll find a good selection in the **Windows\Cursors** folder. To change a cursor, follow these steps:

1. In the window, click the cursor you want to change.
2. Click the **Browse** button to search for a new cursor. New cursors are stored in special files with the filename extension **CUR**. (Don't forget to look in the **Windows\Cursors** folder.)
3. Once you create a new cursor scheme, you can save it for future use by clicking the **Save As** button and giving it a name.

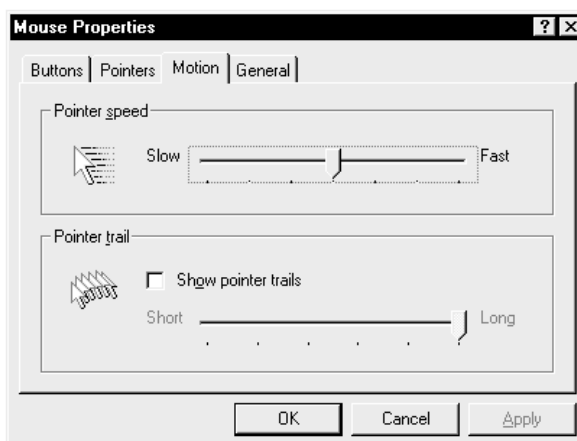
You can create many different cursor schemes. For example, you might create a scheme with large cursors for people who have trouble seeing smaller ones.



Tip: To revert to the original Windows 95 cursor scheme, click the Use Default button.

Mouse Motion Settings

The dialog box for the Motion tab is pictured in the following:



You can change two important settings on this box to match your agility with the mouse:

- ⇒ **Pointer speed** In the Pointer speed box, slide the arrow button left or right to change how fast the mouse pointer moves when you roll the mouse across the mouse pad. Click the Apply button to test your changes. If you're a beginning user, set the speed on the slow side until you get used to the mouse.
- ⇒ **Pointer trail** If you have difficulty keeping track of the mouse pointer, slide the Pointer trail arrow button to the Short side. This creates a "stream" of lingering pointers that follow the mouse pointer on the screen. If you have a portable computer with a liquid crystal display, set this option on the Long side of the slider bar.



Keyboard

General Mouse Settings

The General tab on the Mouse Properties dialog box displays the name of the mouse driver in use for your system. If you change your mouse, click the

General tab and select the type of mouse you've installed from the drop-down list box. Refer to Appendix A for more information on installing devices.

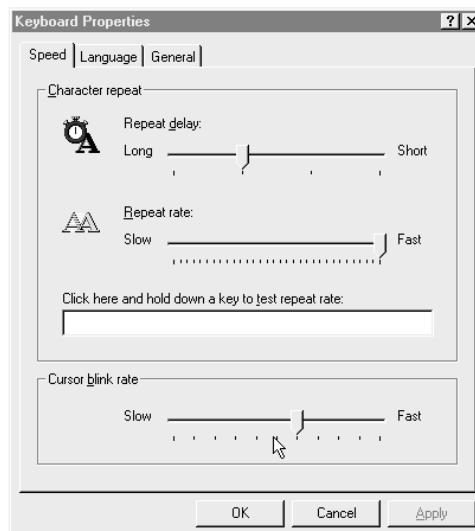
Changing Keyboard and Language Settings

Double-click the Keyboard icon in the Control Panel to change the characteristics of your keyboard and the language settings for your system. You'll see the Keyboard Properties dialog box shown in Figure 5-6.

Key and Mouse Blink Settings

Here are the settings you can make from the Speed tab of the Keyboard Properties dialog box:

- ⇒ **Repeat delay** To change the length of time you hold a key down before it starts repeating, slide the arrow button in the Repeat delay field between Long and Short.
- ⇒ **Repeat rate** To change how quickly characters are repeated when a key is held down, slide the arrow button in the Repeat rate field between Slow and Fast.



Changing the way the keyboard works
Figure 5-6.



Tip: To test either repeat setting, click in the text field, then press and hold a key on the keyboard.

⇒ **Cursor blink rate** To change the blink rate of the cursor, click and slide the arrow button in the Cursor blink rate field. The blinking cursor on the left changes its rate as you adjust the slider.



Note: The General tab dialog box includes a field where you can specify a different type of keyboard. If you switch to an AT&T, Olivetti, or older IBM XT keyboard, click the General tab to change settings.

Language Settings

Click the Language tab in the Keyboard Properties dialog box if you need to change the language translations used by your keyboard. You can add more than one language, then switch between language translations by pressing keys on the keyboard.



Display

Personalizing Your Desktop

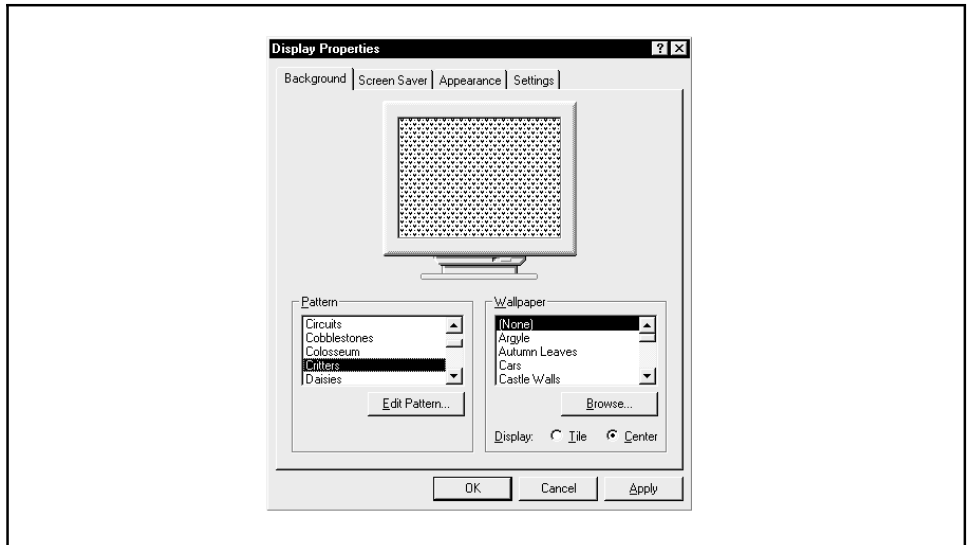
There are a number of ways to personalize the desktop. You can change the background color, add a picture to the background, change the display size, add new options to the Start menu, and create shortcuts on the desktop. Recall from Chapter 4 that shortcuts are objects you copy to the desktop to make it easier to start programs.

If more than one person is using a computer, each can create personalized desktop settings and display them on the screen when they log in. This is covered under “Profiles for Multiple Users” near the end of this chapter.

You can access the dialog box for changing the desktop and screen in two ways:

- ⇒ Double-click the Display object in the Control Panel.
- ⇒ Right-click a blank part of the desktop, then choose Properties from the following menu:

The Display Properties dialog box
Figure 5-7.



The Display Properties dialog box appears, as shown in Figure 5-7. This dialog box has a number of options for customizing your display. We'll discuss only desktop patterns, wallpaper, and monitor settings here. The screen saver options are discussed in Chapter 6.

Choosing Desktop Patterns and Pictures

When the Display Properties dialog box first appears, you see the contents of the Background tab. There are two fields, Pattern and Wallpaper. The monitor depiction in the dialog box displays the current settings of these fields.

Press an up- or down-arrow key on the keyboard to scan through the Pattern list. As you scan, a sample of each pattern appears in the monitor. To create your own custom pattern, refer to “Creating Your Own Patterns” below.



Tip: If you plan to use Wallpaper, choose None in the Pattern field to prevent overlap.

To put a picture on the desktop, click the Wallpaper field, then press an up- or down-arrow key to view the different options. Notice the Display option buttons below the Wallpaper field. Click Center if the wallpaper image you chose is one large image and you want to place it in the center of the desktop. Click Tile if the image is very small. Tile repeats the image over the desktop. To get a better view of tiled images, click OK to close the dialog box and view the tiles on your actual desktop.

Each name listed in the Wallpaper field is the name of a graphics file. You can create your own pictures using the Windows 95 Paint program, as you'll see in Chapter 11.

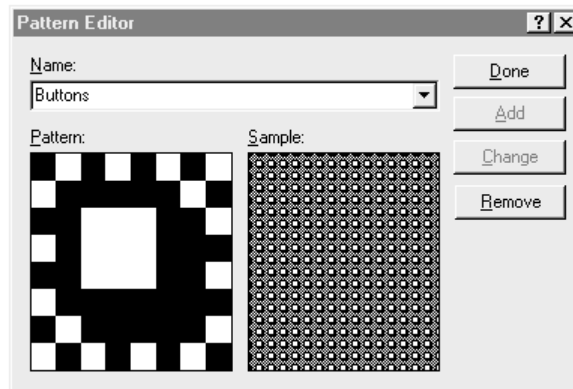


Tip: You can get creative with the pictures you place on your desktop. For example, you can scan in pictures of your kids or a menu from your favorite lunch counter. On the more practical side, you could create a desktop picture that lists important dates and phone numbers.

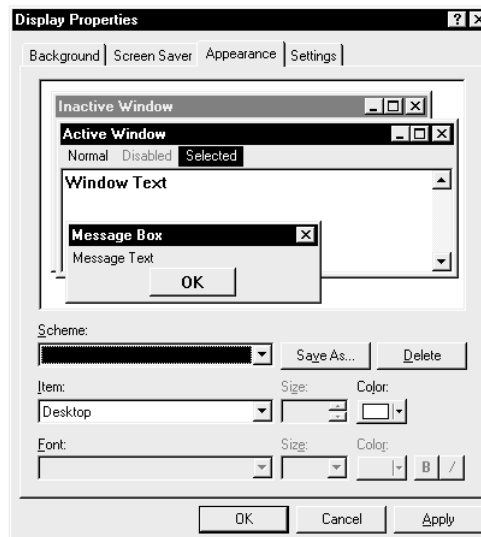
Creating Your Own Patterns

To create your own customized background patterns:

1. Click an existing pattern in the Pattern field. For example, you could click Buttons.
2. Click the Edit Pattern button to display the following dialog box:



3.



Changing the
appearance of
the desktop
Figure 5-8.

To change a pattern, click any block (pixel) in the Pattern box to change it to black or white. If you click a black pixel, for example, it changes to a white one.

4. When the pattern is the way you like, type a new name in the Name field.
5. Click the Add button. This adds your new pattern to the list of patterns available in the Pattern list box.

If you want to permanently change the existing pattern, click the Change button, although it is recommended that you keep all existing patterns and save any changes under a new name. Click Remove to remove any patterns from the list.

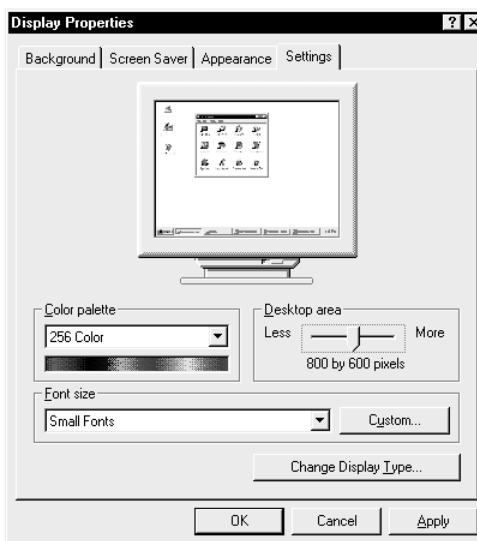
Changing Color Schemes and Fonts on the Desktop

To change the Windows 95 color scheme, click the Appearance tab on the Display Properties dialog box. Your screen will look like the one in Figure 5-8. On this page you can change the color of different parts of the screen, as well as the font and font size of the letters onscreen.

There are two main areas to this dialog box. At the top, you see examples of each desktop feature, including title bars, active and inactive windows, window borders, and message boxes. The bottom of the box has controls for

5

The Settings tab for changing screen color and screen resolution
Figure 5-9.



changing the color or text size of various elements. You can change the color scheme by selecting a predefined configuration or by changing individual components, as follows:

- ⇒ **To change the entire scheme** Click the down-arrow in the Scheme field, then press an up- or down-arrow key on your keyboard to see an example of each scheme. When you find a scheme you like, click the OK button.
- ⇒ **To change an individual element** In the upper window, click the element you want to change, then pick a new color or font in the lower window. You pick a new color by clicking the down-arrow button in the Color field. If the element has text in it, you can choose a new font, font size, and font color in the Font, Size, and Color fields. When you're done selecting a scheme, click the OK button.



Note that you can also click the Apply button, which applies the new scheme to your desktop but keeps the dialog box open. By clicking Apply, you can experiment with different display schemes before choosing the one that suits you best.

Changing the Display Characteristics

Some computers support high-resolution video systems. You can adjust the number of colors and the resolution for your display by clicking the Settings tab on the Display Properties dialog box. The dialog box shown in Figure 5-9 appears.

Here are the settings you can change on the Settings tab:

- ⇒ **Color palette** Click the down-arrow in the Color palette field to set a color range. Your system may run slower when using a large number of colors.
- ⇒ **Resolution** Slide the button in the desktop area field to adjust the resolution of your monitor. At high resolutions you see more windows on the screen, but they appear smaller and it can be difficult to read the text. You might want to choose a larger font in the Font size field if you choose a high-resolution setting.
- ⇒ **Font size** You can change the size of the font by clicking the down-arrow in this field. You can also specify custom fonts by clicking the Custom button.
- ⇒ **Display type** Click the Change Display Type button to choose a different monitor if you're switching between monitors or installing a new one.

Choose settings that are appropriate for the work you are doing. For example, you might work on a high-color, high-resolution screen when editing graphics, but work at lower resolutions when running other applications.



Note: With some systems, you need to restart your system before the new settings can take effect.

Customizing the Start Menu

Chapter 4 explained how you can start programs and open documents in several ways. You can choose program or document options on the Start menu, browse through the folder structure, double-click shortcuts on the desktop, or use the Run option on the Start menu. This section shows how to add options to the Start menu. It explains how you can start your favorite programs and open documents you use often directly from the Start menu without having to click around very much.

For this example of adding an option to the Start menu, we'll add the Solitaire game. While you can start Solitaire by opening the Start menu and choosing Programs, then Accessories, then

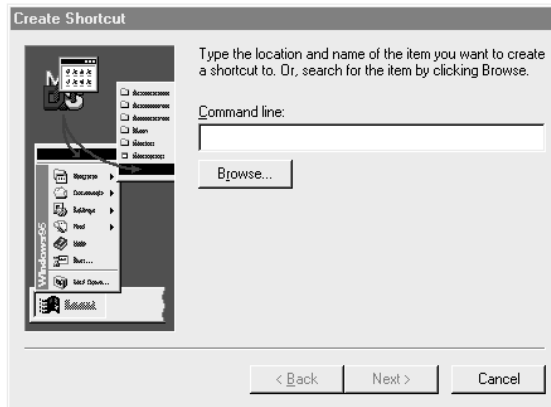
5



Putting a new option on the Start menu

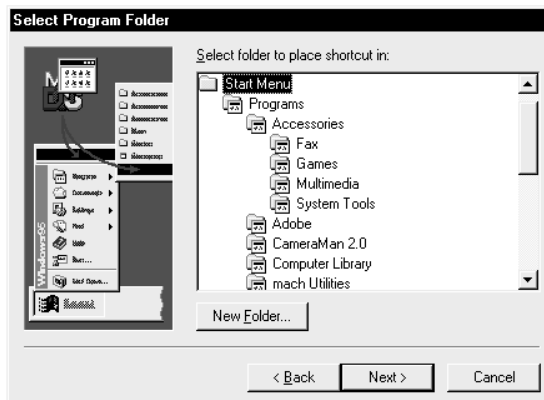
Figure 5-10.

The Create
Shortcut
wizard
Figure 5-11.



Games, this exercise shows how to put Solitaire on the top of the Start menu, as shown here, to make it even easier to start:

The Select
Program
Folder dialog
box
Figure 5-12.



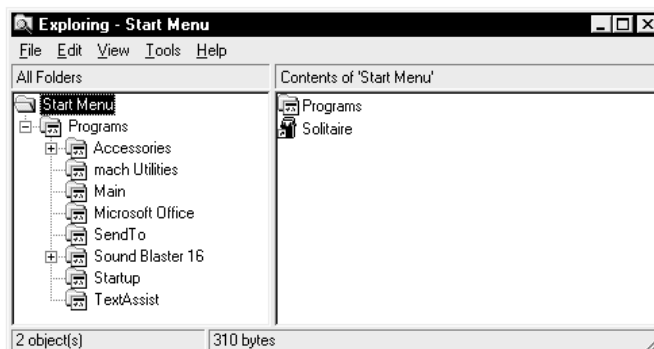


To add a new option to the Start menu, follow these steps:

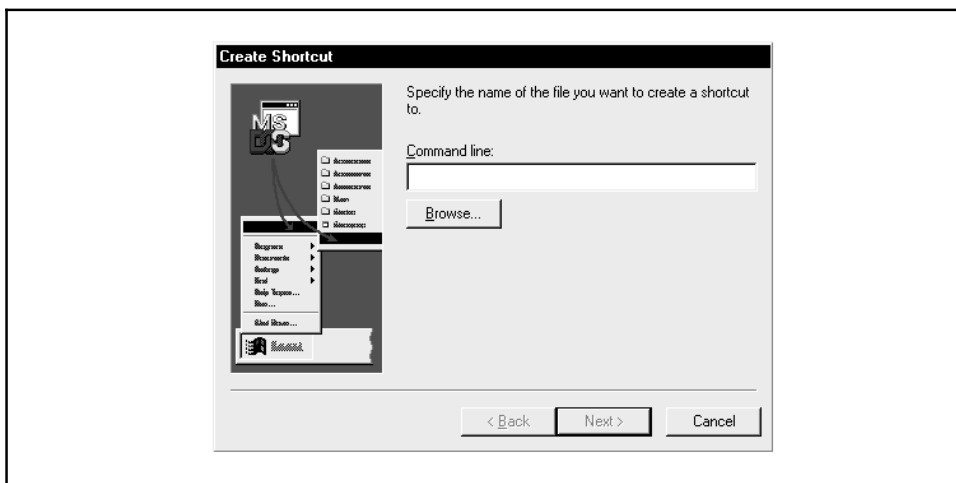
- 1. Choose Settings, then Taskbar from the Start menu. The Taskbar Properties dialog box appears.**
- 2. Click the Start Menu Programs tab to see the dialog box shown in Figure 5-10.**
- 3. Click the Add button to display the Create Shortcut wizard, which is shown in Figure 5-11.**
- 4. To place the Solitaire game on the Start menu, type SOL.EXE in the Command line field. Note that you can also click Browse to search for the filenames of programs or games you want to add to the Start menu.**
- 5. Click the Next button to see the Select Program Folder dialog box in Figure 5-12. The Select Program Folder dialog box presents an interesting view. It shows the hierarchy of the Programs options on the**

5

Creating a
custom
program group
Figure 5-13.



The Create Shortcut wizard for putting programs inside a folder
Figure 5-14.



Start menu. By looking in the window, you can see the relationships between the programs. Click Start Menu and Programs, then notice the Accessories option. Accessories has four items under it that represent the four options on the Accessories cascading menu—Fax, Games, Multimedia, and System Tools. Click Accessories to see this relationship. If you wanted to add a new option to the Accessories menu, you would simply click Accessories.

6. For this exercise we want to put the Solitaire option on the Start menu itself, so click Start Menu in the window (as shown in Figure 5-12), then click the Next button.
7. Type the name you want to appear on the menu. *Sol.exe* appears by default—type **Solitaire** to overwrite it.
8. Click the Finish button, then click the Start menu button to see the new Solitaire option.



Tip: An even easier method of adding an item to the Start Menu is to drag and drop a program right on the Start button. First open a folder window where the program is located so you can click and drag the program object.

Creating Custom Groups on the Start Menu

When you click Programs on the Start menu, you see a custom group called Accessories. Windows 95 adds this custom group during setup. You can add your own custom group if you have a lot of programs you want to add to the

Start menu. In the following example, you'll create a custom group called Daily (or any name you prefer) to hold programs you start on a daily basis. Then when you click programs you'll see Accessories and your new group.

1. Click the Start menu, then the Settings option, then the Taskbar option.
2. Click the Start Menu Programs tab, then click the Advanced button. The Windows Explorer appears, as shown in Figure 5-13. Double-click the Programs folder in the left pane to expand it. (Programs is already expanded in the figure.)

Take a moment to look at the contents of this window, shown in Figure 5-13. Each item under Programs is related to a folder on the Programs cascading menu. Click Start, then Programs now to see this relationship. You're going to create a new folder and add objects to it. The new folder will appear on the Programs cascading menu.

3. Click File on the menu bar, then choose New.
4. Click Folder. A new folder appears in the window with its name highlighted. Type a new name, such as **Daily**, and press ENTER.
5. Double-click the new folder and choose File on its menu bar, then New and Shortcut. The Create Shortcut wizard appears, as shown in Figure 5-14.
6. Click the Browse button to search for programs on your system that you want to put in the folder. The programs you add will appear on the new Daily cascading menu. The Browse dialog box opens so you can search different drives and folders.
7. When you locate a program, double-click it, which brings you back to the Create Shortcut wizard. Now the name of the program is in the Command Line field.
8. Click the Next button, then type a name for this menu option. The name you type is the name that will appear on the cascading menu.
9. Click the Finish button and repeat the above steps to add more options to your new menu.

Reorganizing the Start Menu

You can reorganize the options on your start menu. For example, in Figure 5-13, notice the folders called mach Utilities, TextAssist, and Main (which is a relic from a previous Windows 3.1 installation). I don't want these folders on my Programs menu because I rarely choose them and they tend to clutter the menu. Here's a procedure for reorganizing folders into a new folder (in this case, I'll call the new folder *Other*):

1. Follow steps 1 through 4 above to create a new folder called Other that branches from Programs.

2. Click the Programs folder in the left pane. This displays a list of its folders in the right pane.
3. Click and drag any folder in the right pane over to the new Other folder in the left pane, then drop the folder onto the Other folder.

When you drop the folders, they disappear from the left pane—but don't worry. They are now inside the new Other folder. If you click the Other folder (or whatever you have named it), you see the folders. Close the Explorer, click the Start button, and then click Other on the Programs menu to see the reorganized folders.

Deleting Options on the Start Menu

You can remove any option from the Start menu or its cascading menus by following these steps:

1. Choose Settings, then Taskbar from the Start menu.
2. When the Taskbar Properties dialog box appears, click the Start Menu Programs tab (see Figure 5-10).
3. Click the Remove button to see the list of folders that appear on the Programs cascading menu.
4. To remove an item in a folder, click the folder to display its contents, then click the item to remove, and click the Delete button.

Creating Disk Drive and Printer Shortcuts

Shortcuts provide the easiest way to start a program, open a document, or access a Windows 95 utility, device, or other feature. In Chapter 4, you created Paint and WordPad shortcuts on your desktop. The steps for creating a shortcut are simple. You open the folder that contains the object to which you want to create a shortcut, then right-click and drag the object to the desktop, and finally choose Create Shortcut(s) Here from the menu that appears. This section shows you how to create disk drive and printer shortcuts to make your work with Windows 95 easier.

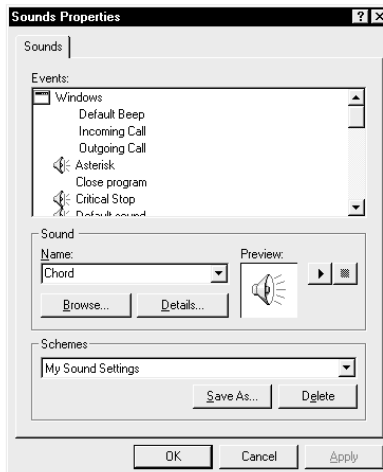
T
ip: You can also right-click the desktop, choose New, and then choose Shortcut to run the Create Shortcut wizard.



Sounds

Creating a Disk Drive Shortcut

The Sounds
Properties
dialog box
Figure 5-15.



When you create a disk drive shortcut, you can search through the drive's folder structure right from the desktop without having to open the My Computer window first. If you access a drive often, create a shortcut for it. We'll create a shortcut for drive C in this example, but you can repeat the steps for any drive on your system.

1. Open the My Computer window, then right-click the drive C object and drag it over a blank portion of the desktop while holding the mouse button.
2. Release the mouse button to display the following menu:



3. Choose Create Shortcut(s) Here

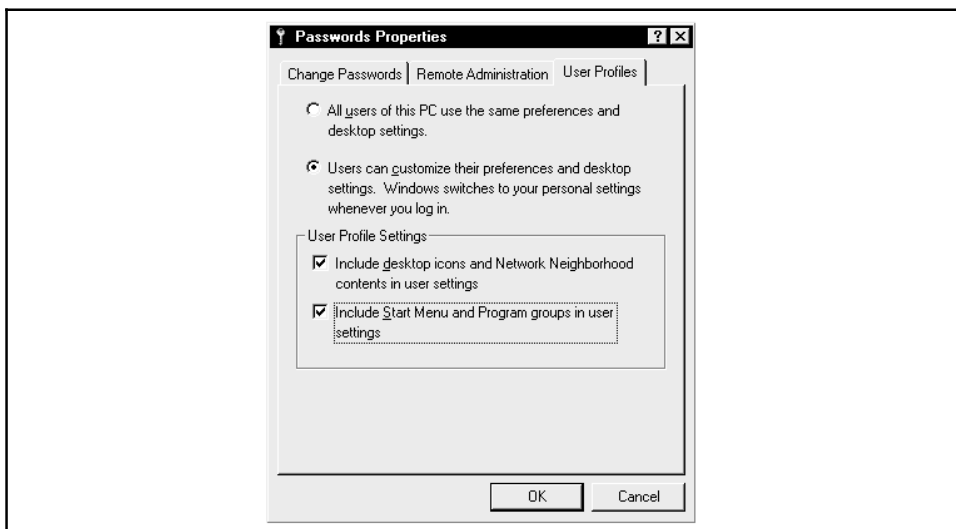
Now you can access the drive from the desktop rather than first opening the My Computer window. You might want to create similar shortcuts for other drives as well.

Creating a Printer Shortcut

When you create a shortcut to a printer on the desktop, you can drag and drop documents you want to print to the printer object, or right click the object to change printer properties. The procedure is very similar to the previous one.

User Profiles
tab options in
the Passwords
Properties
dialog box

Figure 5-16.



Note: Refer to Appendix B for more information on installing and working with printers.

1. With the My Computer window open, double-click the Printers folder in the window.
2. When the Printers window opens, right-click your printer and drag it over a blank portion of the desktop.
3. Choose Create Shortcut(s) Here on the menu that appears.

Now that you've added two new items to the desktop, line up the objects by right-clicking the desktop and choosing Line Up Icons from the menu.

You can place many other objects on the desktop. In Chapter 7 you'll create a folder to hold the documents you access most often. You might have other objects, such as programs and documents, you want to place on your desktop. Just follow the procedures above.

Customizing Event Sounds

When Windows 95 starts, it beeps to let you know it is ready. You also hear sounds if Windows 95 needs your attention, or if you try to do something wrong. You can change these sounds to make them more interesting if a sound card is installed in your system. For example, you could change the error sound to "Uh uh, you can't do that!"

To change sounds, follow these steps:

1. Double-click the Sounds object in the Control Panel. You'll see the Sounds Properties dialog box shown in Figure 5-15.
2. Each system event that generates a sound is listed in the Events field. Click the event you want to change.

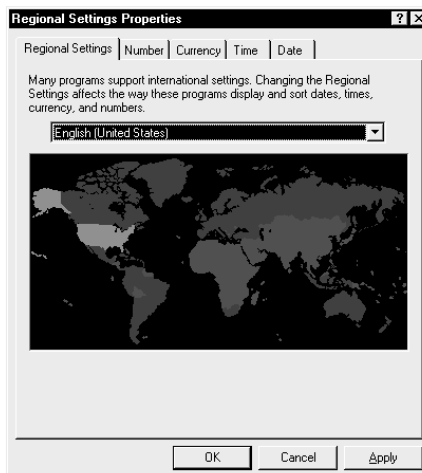


Note: All sounds used by system events are stored as files with the extension .WAV. You can create your own sounds by using the Sound Recorder utility, as discussed in Chapter 22.



3. To pick a new sound, click the down-arrow in the Name field. The Name field lists sound files in the Windows folder by default. To view sound files on other drives or folders, click the Browse button.
4. Click the sound you want to hear, then click the right-pointing arrow in the Preview field to listen to the sound. If you like the sound, leave it highlighted and go to the next step.
5. After changing the sound scheme, click the Save As button and give it a name. For example, if you've created a sound that gives verbal messages to new users, save it with a name like "New user sounds."
6. Click OK when you're done editing sound events.

The Regional Settings Properties dialog box
Figure 5-17.



To restore the Windows 95 default sound scheme, click the down-arrow in the Schemes field, then choose Windows Default from the list.



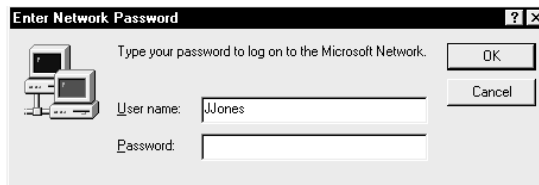
Tip: Click the down-arrow button in the Schemes field and try the Musica, Nature, Robotz, and Utopia sound schemes.

Profiles for Multiple Users

If more than one user works at your computer, you can have Windows save different desktop and Start menu settings for each user. Each user's personal settings are called a *user profile*. For example, suppose Anna Colgan works on the day shift and logs in to the computer by typing **Acolgan** as her login name. She can add options to the Start menu and create shortcuts on the desktop that only she can see. John Jones works the night shift. When he logs in with the name **Jjones**, he sees only the desktop and Start menu that he personalized for his own use.

To enable different users to have different user profiles on a single computer, open the Control Panel and double-click the Passwords object. When the dialog box appears, click the User Profiles tab, if necessary, to display the options shown in Figure 5-16.

Click the second button, the one that begins “Users can customize...,” as shown in Figure 5-16, then set the two lower checkboxes if you want to give users the options listed. Shut down your computer, then have each user start it up and log back in under his or her own name. When the computer starts up, users will see the following dialog box where they can type their new user names and passwords:



When users click OK, the following dialog box appears:



It verifies the creation of a new account. When users click the Yes button, a desktop appears with a set of default desktop objects and Start menu options that they can customize.

Regional Settings

Which number, currency, time, and date formats your computer uses depends on the country that you selected during the installation of Windows 95. If you travel to another country and wish to use formats appropriate for that country, open the Regional Settings Properties dialog box by opening the Control Panel and double-clicking the Regional Settings object. You'll see a dialog box like the one in Figure 5-17.

In most cases, all you have to do is click a region on the map and Windows 95 changes its formats to match that region. If you need to make special adjustments, click the Number, Currency, Time, or Date tab and change settings. If you click the down-arrow on any field, you'll see a list of alternative choices that are appropriate for the region you selected.

This chapter presents a number of useful tips and tricks to speed up your work with Windows 95. You'll learn more tips for organizing your desktop and learn useful techniques for working with applications, documents, and printers.

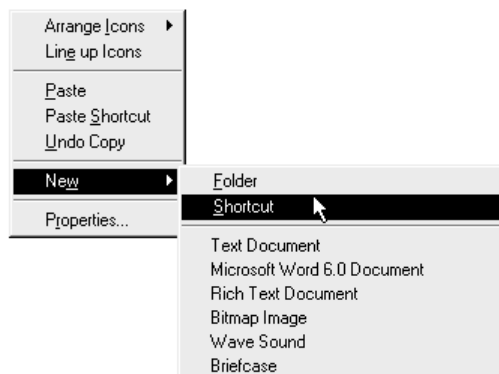
First we cover more about shortcut objects. Shortcuts give you immediate access to programs and documents. All you have to do is double-click an object on the desktop, rather than scan multiple cascading menus on the Start menu or rummage through folders on the desktop. You can create shortcuts just about anywhere, even in folders. One interesting trick is to create more than one shortcut for the same program, then customize each shortcut. For example, you could create one WordPad shortcut that accesses files in a personal folder and runs in a full-size window. A second WordPad shortcut could access files in a business folder and run in a normal window.

Besides shortcuts, this chapter explains how to start programs automatically, print with the drag and drop method, and view the print queue (the files that have yet to be printed). It also provides a bunch of useful editing tips. You'll learn cut and paste techniques, how to save what's on the Clipboard, and how to work with fonts. The end of the chapter describes screen savers and how to use the Task utility instead of the Taskbar for switching among programs.

Using the Shortcut Wizard

In previous chapters, the method you learned for placing shortcuts on the desktop was to open the window where the object for the shortcut exists, right-click the object, and drag it to the desktop. An alternative method is to use the *Shortcut wizard*. With the Shortcut wizard, you start from the place where you want to create the shortcut, then answer questions asked by the wizard to create the shortcut in that location. As an example, follow these steps to create a shortcut for the Solitaire game on your desktop:

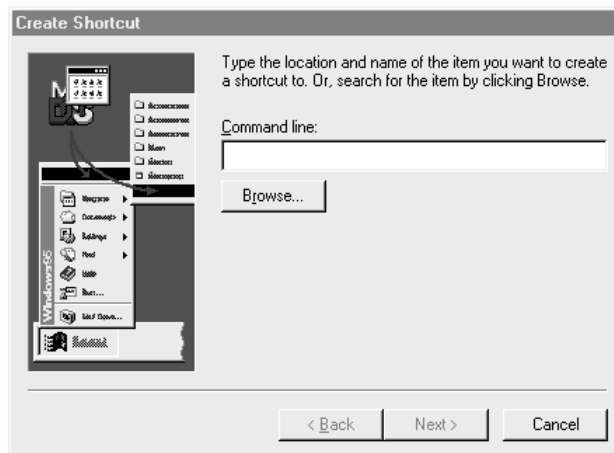
1. Right-click the desktop to open its menu, then choose New and Shortcut, as shown here:



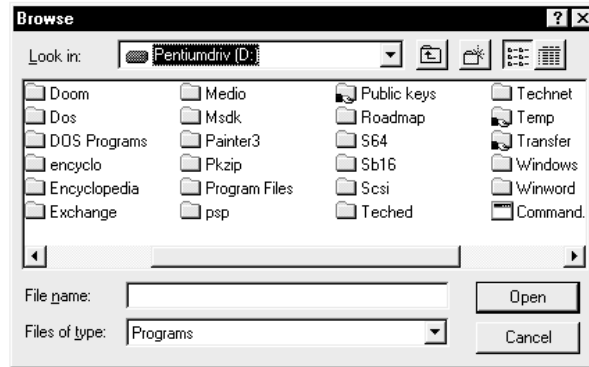
The Create Shortcut wizard shown in Figure 6-1 appears. A *wizard* is a series of dialog boxes that guide you through a particular process, like creating a shortcut in this case.

2. If you know the drive, folder, and name of the program you want to create a shortcut to, you can just type it in the Command line field. For our example, click the Browse button to search for the Solitaire program. You see the Browse dialog box shown in Figure 6-2.
3. We're looking for the Windows folder, so you might need to choose a different drive for your system. If so, click the down-arrow beside the Look in field and choose the drive that holds your Windows folder. If you're not sure which drive Windows is in, scan the folder list for each drive until you find the folder. When you locate the Windows folder, double-click it to display its contents. The Windows folder then appears in the Look in field, and its contents appear in the window below.
4. Click the right slider button to scan through the list until you see the file called SOL, then double-click it. You are returned to the Create Shortcut dialog box (see Figure 6-1). The drive, folder, and filename of the file you chose appear in the Command line field.
5. Click the Next button, then type a name for the shortcut. For this example, type either **Shortcut to Solitaire** or **Solitaire**. Your typing overwrites the text in the field.
6. Click the Finish button to create the shortcut.

The Create
Shortcut
wizard
Figure 6-1.



Searching for the program to create a shortcut to
Figure 6-2.



The Solitaire object appears on the desktop and you can double-click it at any time to start playing Solitaire.



Note: If you don't want the Solitaire shortcut on your desktop, right-click it and choose Delete on the context menu to remove it.

Organizing Shortcuts in Folders on the Desktop

The desktop is a great place to put shortcut objects for programs and documents you access often, but if you put a lot of objects on the desktop, the desktop can get cluttered. One way to avoid clutter is to put folders on the desktop, then place different shortcuts and objects inside the folders. For example, you might create a Personal folder and a Business folder.

The advantage of putting folders on the desktop is that you can organize programs and information the way you want, and you don't need to rummage through a bunch of other folders to find the information. You can even create temporary folders to store files for short-term projects. The files will be available in the folder until you finish the project. When the project is done, you can back up the files to a diskette or tape and delete the folder on the desktop.

Creating Shortcuts to an Existing Folder

You'll be accessing files and folders in the Windows folder throughout this book, so let's create a shortcut to the Windows folder on the desktop.



Note: You can't use the Shortcut wizard to create a folder shortcut.

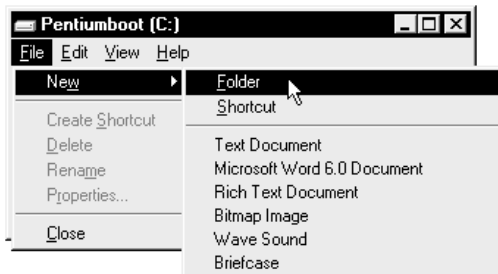
1. Open the window for the drive that holds your Windows folder. If you have a Drive C (or D) object on your desktop (Chapter 5 explained how to create one), double-click it. Otherwise, open the My Computer window and double-click the drive there.
2. Right-click the Windows folder, then drag it out over the desktop.
3. Let up on the mouse, then choose Create Shortcut(s) Here.

Now a shortcut to the Windows folder is available on the desktop. Any changes you make in the shortcut folder, like adding or removing files, are made in the original folder.

Creating a Personal and Business Folder on the Desktop

As mentioned previously, you can create folders directly on the desktop for your personal and your business programs and files. In the following exercises, we'll instead create the new folders at the root level of a disk drive, then create shortcuts to those folders on the desktop. This makes the original folder easy to access when you're working in applications (you use the shortcut when you're just working on the desktop). To do this, begin by determining which disk drive will hold the new folders. In the following examples, we'll use drive C, but you can choose any drive on your system that has enough disk space:

1. Double-click the Drive C object on the desktop to open its window, or open the My Computer object and double-click a drive object there.
2. Click File on the menu bar, then click New and Folder, as shown here:



3. A new folder appears in the window with the default name "New Folder":



4. Type **Personal** to overwrite the default name, then press ENTER.
Repeat the above steps to create a Business folder as well. Now you need to make the folders more accessible. The last step is to create a shortcut to them on the desktop.
5. Right-click and drag the Personal folder from the drive C window over the desktop, then let up on the mouse and choose Create Shortcut(s). Here on the menu that appears. Do the same for the Business folder.

Your desktop should now have objects similar to the following:



When you're done, you can start putting shortcuts in the new folders for the programs and documents you use most often, as discussed next.

Putting Shortcuts in Folders

If you're going to store personal files in the Personal folder, you might as well create shortcuts in the folder for the programs you use to create those files. Then you can just open the folder and start programs or open files in one place. (Remember, you can create multiple shortcuts to the same program and assign different startup settings to each.) After you work through this section and add a few shortcuts, you'll see how to change the properties of the shortcuts so that you can specify exactly which folder you want the program to save files to by default.

There are three ways to create a shortcut in a folder. The exercises below illustrate each technique so you can get a little practice. If you try each technique, your Personal folder will have shortcuts for Solitaire, Paint, and WordPad. Start by double-clicking the Personal folder to open its window.

- ⇒ **The Shortcut Wizard** The Shortcut wizard method guides you through the process of creating a shortcut. To create the Solitaire shortcut in the Personal folder, choose New and Shortcut from the File menu. Now refer to the section called “Using the Shortcut Wizard” earlier in this chapter for further instructions. When you’re done, you’ll have a Solitaire shortcut in the window.
- ⇒ **Drag and drop** Now create a Paint shortcut by using the drag and drop method. Open the Program Files folder, which is located on the same drive as your Windows folder. Next open the Accessories folder inside the Program Files folder. Right-click and drag the Mspaint object from the folder to the Personal folder. Let up on the mouse, then choose Create Shortcut(s) Here. Now you have a shortcut for Paint in the window.
- ⇒ **Copying** Finally, create a WordPad shortcut. You already have an object called Shortcut to WordPad on your desktop. Right-click and drag this object over the Personal folder, then release the mouse and choose Copy Here from the menu, as shown here:



A copy of the WordPad shortcut is placed in the folder. This illustrates how you can create a new shortcut by copying an existing shortcut.

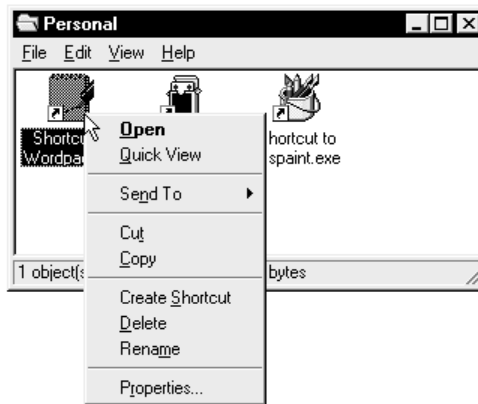


Note: Another method to copy a shortcut from one place to another is to right-click the shortcut, choose Copy from the context menu, then right-click the folder where you want to put the shortcut and choose Paste.

Telling Windows How You Want a Shortcut to Work

Now you have three shortcuts in your Personal folder. This section shows how to really personalize your system by changing the properties of individual shortcuts.

1. Make sure the Personal folder is open by double-clicking it now.
Right-click the Shortcut to WordPad object to display its context menu:

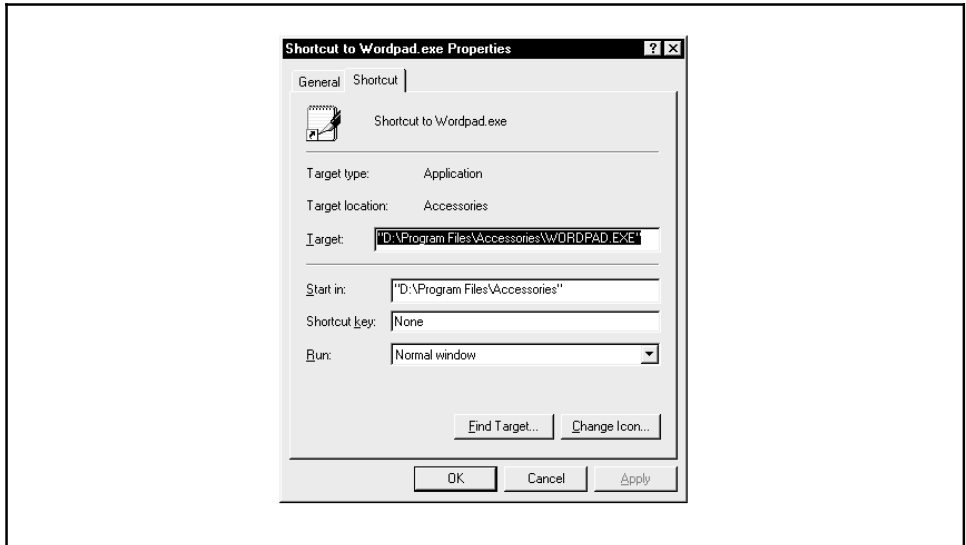


2. Choose the Properties option, then click the Shortcut tab to see the dialog box shown in Figure 6-3.

This page of the Shortcut Properties dialog box displays information about the shortcut, the program it starts, and startup properties. For example, the Target location and Target field display the folders and filename of the original object. We are interested in the lower three fields:

- ⇒ **Start in** This is where the WordPad program will automatically open or save files. Click this field, then type **C:\Personal**. Replace C with another drive letter if you created the Personal folder on another drive. Now when you run WordPad by starting it with this shortcut, WordPad will *recommend* the Personal folder as a place to save files (although you can still choose to save files in other locations).
- ⇒ **Shortcut key** In this field, you can specify a keyboard combination that you press to switch to the program when it is up and running. To specify the key combination **CTRL-ALT-W** for switching to WordPad, press the **CTRL** key, then type **W**. CTRL-ALT is inserted in the field. Note that ALT is automatically inserted since you can't specify just CTRL key combinations.
- ⇒ **Run** Click the down-arrow in this field to specify how you want the program to start, either in a normal window, a maximized window, or minimized in the Taskbar.

The Shortcut Properties dialog box
Figure 6-3.



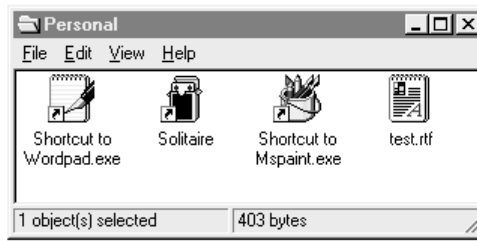
Repeat the above steps for the MS Paint and Solitaire shortcuts, but make sure to use a different hot-key combination. You don't need to specify anything in the Start in field for the Solitaire shortcut since it doesn't save files.

Testing a Shortcut

To test your new customized WordPad shortcut, follow these steps:

- 1. Double-click the WordPad shortcut to open WordPad, then type some text in the workspace.**
- 2. Choose Save As from the File menu. Notice that the Personal folder is listed in the Save in fields.**
- 3. Type Test** in the File name field.
4. Click the Save button.
5. Test your shortcut key combination. Temporarily switch to another window, then press the key combination to return to your WordPad window.

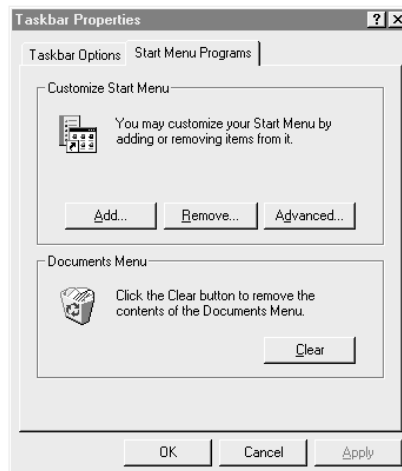
By now your Personal folder window should look like the following, with the new Test file next to the shortcut objects. All files created with these shortcuts are saved in the folder, as you can see in the following illustration:



Starting Programs Automatically

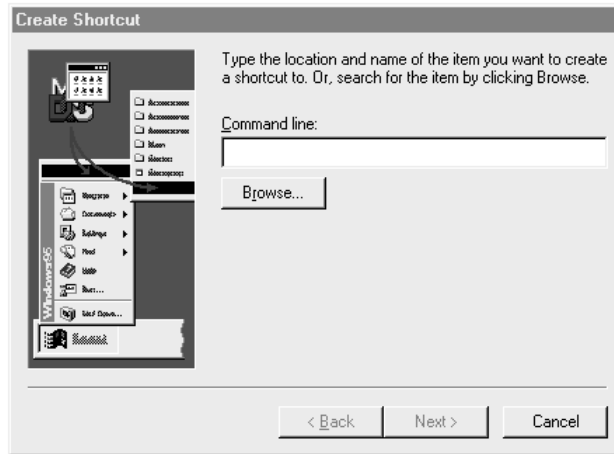
So far you've learned a lot of techniques for quickly starting programs and accessing documents. Why not have Windows 95 just start the programs you use everyday whenever it starts? Here's the procedure for designating a program for automatic startup:

1. Click the Start button, then choose Settings and Taskbar. When the Taskbar Properties dialog box appears, click the Start Menu Programs tab to display the page shown in Figure 6-4.
2. Click the Add button to start the Create Shortcut wizard as shown in Figure 6-5.
3. Type the name of the program to start in the Command line field, or if you don't know the name or folder location for the program, click the



Getting to the
Startup folder
Figure 6-4.

The Create
Shortcut
wizard
Figure 6-5.



Browse button to search for programs on your computer. For example, to start the Calculator every time Windows 95 starts, type **SOL** in the Command line field, or click the Browse button and look in the Windows folder for SOL.EXE. If you use Browse, double-click the program you want to start automatically. You're then returned to the Create Shortcut wizard with the name of the program in the Command line field.

4. Click the Next button to display a dialog box like the one shown in Figure 6-6. Scan down the list and click the folder called Startup, then click the Next button.
5. On the next dialog box, type a name for the program or just use the default name given. This name will appear under the shortcut icon in the Startup folder.
6. Click the Finish button and repeat the above steps for any other programs you want to start automatically when Windows 95 starts.

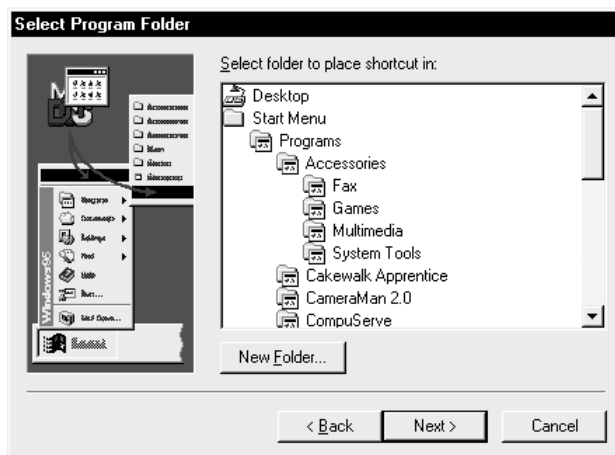
Each program is added to the Startup folder as a shortcut. The next time you start Windows 95, the programs you added to the Startup folder will start automatically.

Changing the Properties of Startup Objects

You can change the properties of objects you add to the Startup folder. For example, you might want to change the location where a program saves files by default as described earlier in the section, "Telling Windows How You Want a Shortcut To Work." To change properties, follow these steps:

Select the Startup folder by scanning down to the bottom of the folder list

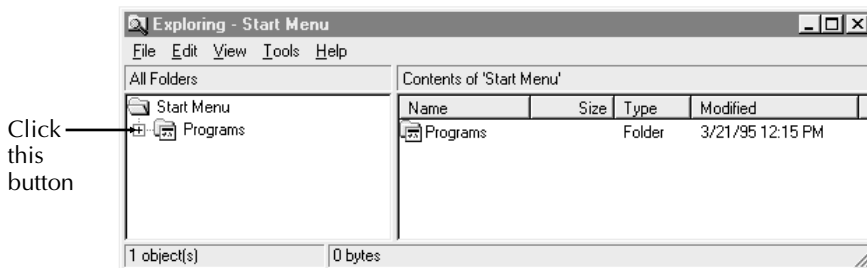
Figure 6-6.



1. Click the Start button, then choose Settings and Taskbar. When the Taskbar Properties dialog box appears, click the Start Menu Programs tab to display the page shown in Figure 6-4.
2. Click the Advanced button to open the Windows Explorer. The Start Menu folder appears in the left pane as shown in Figure 6-7.
3. Click the plus (+) button next to the Programs folder to expand it, then scan down the list to locate the Startup folder.
4. Click the Startup folder, then in the right pane, right-click the startup object you want to change and choose Properties on its context menu.

The Windows Explorer opens to help you locate the Startup folder objects

Figure 6-7.



Now refer to “Telling Windows How You Want a Shortcut To Work” earlier in this chapter for details on changing the properties of the object you have selected.

Printing Tips

Here are a few tips for printing documents. First, you learn drag and drop techniques for printing one or more documents. Then you learn how to view the print queue to see the status of print jobs. Finally, you learn how to get notification when print jobs are done, which is useful if your printer is not near your computer.

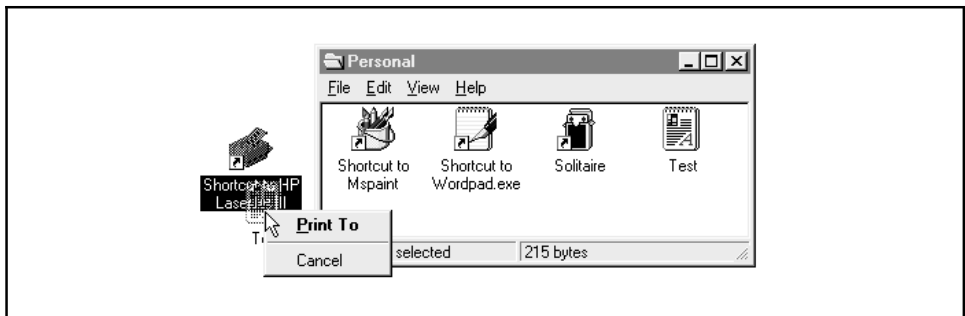
Drag and Drop Printing

In the section “Testing a Shortcut” earlier in this chapter, you created a WordPad document called Test and stored it in the Personal folder. One way to print this document is to start WordPad, load the document, and then choose Print from WordPad’s File menu. But there’s a better way—just click and drag the file over the printer object on your desktop. (You created the printer object in Chapter 5 in the section “Creating a Printer Shortcut.” If you didn’t create it, refer to Chapter 5.) Here’s how to print with the drag and drop method:

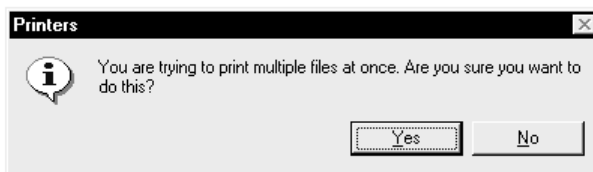
1. Open the Personal folder on the desktop if it is not already open.
2. Right-click and drag the Test file over the printer object on your desktop. You might need to move some windows to see it.
3. Release the mouse button, then choose Print To from the menu that appears, as shown in Figure 6-8.

The document is sent to the printer. Now for the good part. Let’s say you have a number of documents you want to print, but you want to go to lunch. In WordPad, you would need to load each document, then choose

Printing with the drag and drop method
Figure 6-8.



Print from the File menu for each document, which can take some time. Using drag and drop techniques, you can select a group of documents to print and drag them together to the printer object. When you do so, the following dialog box appears to warn you that multiple files are selected:



Just click Yes to begin printing files and go to lunch.



Tip: To select multiple documents in a window, hold the CTRL key, then click each document. Now right-click any document in the group and drag them over the printer object. Write this tip on a sticky note.

Checking On, and Changing, the Status of Print Jobs

You can check the status of files sent to the printer and pause them or stop them from printing altogether. Double-click the printer object where you dragged the files (or the printer icon on the right side of the Taskbar) to display a window similar to the one in Figure 6-9.

Each document waiting to be printed is displayed in the window. You can see the status of the job and who sent the job to the printer. The Owner information is important when people connected to a network are sharing a printer since it tells you who sent a print job to the printer. You might need to contact them or cancel jobs based on whose job is less important. There are several things you can do in the printer window:

- ⇒ **Pause or cancel print jobs** Click any document in the list and choose Pause Printing or Cancel Printing from the Document menu. Pause will temporarily stop a print job until you add paper, switch paper, or rearrange the order of the print jobs. Cancel stops the print jobs completely and removes it from the queue.
- ⇒ **Pause all print jobs** Pause all print jobs by choosing Pause Printing from the Printer menu.
- ⇒ **Delete print jobs** Delete all print jobs by choosing Purge Print Jobs from the Printer menu.

- ⇒ **Rearrange the queue order** You can rearrange the order of print jobs in the queue by clicking and dragging one print job below or above another.
- ⇒ **Printer potpourri** Change the properties of the printer by choosing Properties from the Printer menu. The options on the Properties dialog box are covered in Appendix B. Briefly, you can print to another port on your computer, to a fax, or to a file; change the paper size, orientation (portrait or landscape), and paper source tray; change the resolution and shading intensity; or specify that a new font cartridge has been installed.

Offline Printing

Windows 95 has a unique offline printing feature that lets you send print jobs to a printer queue without actually printing them on the printer. There are several reasons for doing this:

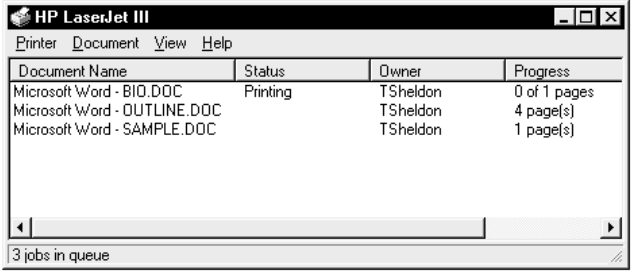
- ⇒ Your printer may be disconnected for service or in use by someone else. You work offline to send jobs to the printer that print when the printer is reconnected.
- ⇒ You may prefer to do all your printing after hours because your printer is noisy or distracting to your work.
- ⇒ You have moved your computer away from your printer, or you have a portable computer and you're working away from the office.

To work offline, right-click a printer and choose the Word Offline option on the context menu. You can also open the printer window, as shown in Figure 6-9, then choose Work Offline from the Printer menu.

In the case of a portable computer, Windows 95 is designed to help mobile users work away from the office. If you disconnect your portable computer from your printer or a network, Windows 95 detects the absence of the printer and automatically switches to offline mode.

6

Checking the status of documents you've sent to the printer
Figure 6-9.



One interesting trick is to create two printer objects for the same printer. You set one printer object to print immediately and set the other to offline mode. You can then send non-time-critical print jobs to the offline printer for after-hours printing and time-critical print jobs to the online printer. Appendix B describes how to create additional print objects for the same printer and how to change the properties of those objects.

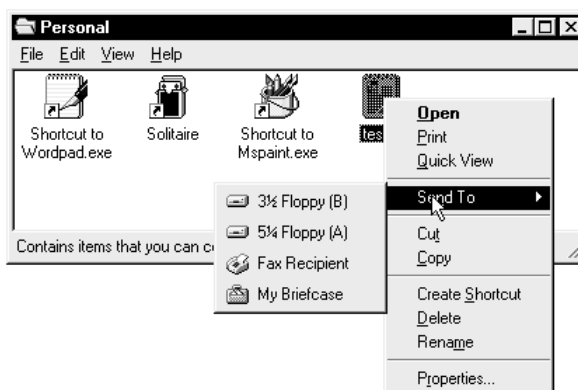
The Fast Way to Print and Send Files

There's another way to quickly send documents to a printer for printing. Every document has a option called Send To on its context menu. You can see this now by right-clicking the test file you created earlier in your Personal folder and choosing Send To. A menu similar to the one shown in Figure 6-10 appears.

Notice the options on the menu. You can send the document to a floppy disk drive, a fax, or the Briefcase (as discussed in Chapter 17). The Send To option simply provides a quick alternative to drag and drop techniques. In this exercise, we'll add an option for your printer to the Send To menu, then when you want to print a document, you can right-click it and choose the printer from the Send To menu.

If you have a floppy disk available, try copying the test file to it. Place the disk in a floppy drive, then right-click the file, choose Send To, then select the drive on the menu. The file is copied.

The reason for the Send To option is obvious if you've ever experienced the inconvenience of trying to drag and drop when a lot of windows are open on the desktop, or the thing you want to drop an object to is in some folder



The Send To menu
Figure 6-10.

that is not currently open. Send To saves you the trouble of rearranging your desktop or opening other windows just to copy or print an object.

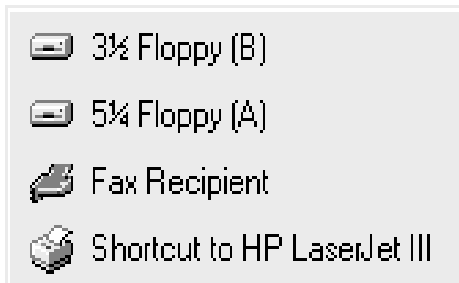
Here's the procedure for adding a printer to your Send To menu:

1. Start by opening the Windows folder. You should have a shortcut to the Windows folder on your desktop if you've been following this chapter. If not, open the My Computer window and double-click the drive where your Windows files are located, then open the Windows folder there.
2. Locate the Send To folder in the Windows window and double-click it to see its contents. You don't need to open the Send To window for this procedure, but by doing so you can see the current objects in the window, which are the same objects you see on the Send To menu when you open it. Any object in this folder becomes an option on the Send To menu of document files.
3. Right-click and drag the printer shortcut on your desktop into the Send To folder. Alternatively, open the Printers folder in the My Computer window and drag a printer object from there into the Send To folder.
4. When you let up on the mouse, choose Create Shortcut(s) Here.



Tip: You can rename the printer object you dragged into the Send To folder so it doesn't have "Shortcut to" in its name.

Now when you right-click a file object and choose Send To, you'll see a menu similar to the following:



Just choose the printer to print the file.

Editing Tips

This section presents a few editing tips that you can try yourself by opening WordPad and Paint. While you'll learn more about WordPad and Paint in Chapters 10 and 11, the tips discussed here are applicable to any Windows 95 application, so you can start using them right away.

Cut and Paste Techniques

You can use *cut and paste* techniques to copy or move text, graphics, columns, tables, and other information from one place to another in the same document or between documents. Commands for cutting and pasting are located on the Edit menu and toolbar of nearly every Windows 95 application.

Cutting and pasting is easy. First, highlight the text, graphics, sound, video, or other information you want to copy or move. Then choose Cut or Copy from the Edit menu of the application, or click the Cut or Copy buttons on the application's toolbar. The information you selected is placed on the *Clipboard*, which is a special holding area that keeps the information intact while you switch to other parts of your document or to applications running in other windows.

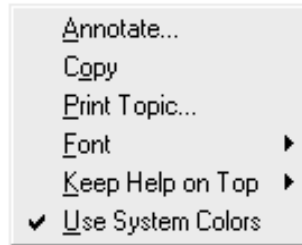
- ⇒ **Cut** Removes the selected information from its current location, but keeps the information in the Clipboard so you can paste it elsewhere.
- ⇒ **Copy** Leaves the selected information in place, but places a copy of it in the Clipboard.

Once the information is on the Clipboard, you can scroll to an insert point in your current application or switch to another application window, and then paste the information by choosing Paste from the Edit menu (or clicking the Paste button on the application's toolbar).

Try the following exercises to see how the Clipboard works. You'll copy a block of text to another location in a WordPad document, then open another WordPad window and copy the text into that window. The second part of the exercise demonstrates how to create new documents by copying text from existing documents.

1. Start WordPad by double-clicking one of the shortcuts you created earlier.
2. For this exercise, you could type some text, but we'll make it easy on you by copying text from a Help menu. Click the Help menu option, then choose Help Topics.

3. When the WordPad Help dialog box appears, click the Contents tab (if necessary), then double-click “Working with Documents” and, below it, “Creating a new document.”
4. Click the Menu button to display the following menu:



5. Choose Copy on the menu to copy the help text to the Clipboard, then close the help window.
6. Back at your WordPad window, choose Paste from the Edit menu or press CTRL-V to paste the information in the document.

That demonstrates how easy it is to copy information from one window to another. You can now edit the help text to create help files for other people, or combine various help topics of your own and print them.

Information remains on the Clipboard, even after you paste it somewhere, until you copy new information to the Clipboard. Try the following:

1. Paste the information again by pressing CTRL-V. This puts a second copy of the information in your document.
2. Click in the left margin next to any line in the document to highlight the line. Choose Copy from the Edit menu or press CTRL-C to copy the line to the Clipboard.
3. Click at the end of the document and press CTRL-V a number of times. The new single line of text you copied to the Clipboard is pasted whenever you press CTRL-V.

Information on the Clipboard remains on the Clipboard until you copy new information. You can switch to other application windows and paste the information on the Clipboard there as well.

Saving What's on the Clipboard

As I said, information on the Clipboard is lost the next time you copy new information to it. However, you can save what's on the Clipboard to a disk file for later use. Here are examples of the type of information you might want to save in this way:

- ⇒ Often-used text, like the wording in contracts and other legal documents
- ⇒ Company logos
- ⇒ Special character strings, including math equations and foreign language characters

The Clipboard is the invisible holding area for copy and cut operations, but you can use it to save information for later use. The following exercise shows you how to save your name and address in a Clipboard file that you can retrieve later at any time:

1. Type your name and address in the WordPad window, then highlight it and choose Copy from the Edit menu to place it on the Clipboard.
2. Open the Clipboard by clicking the Start button, then choosing Accessories and Clipboard Viewer. You see a window similar to the following with your name and address in the window:



3. Choose Save As from the File menu to open the Save As dialog box. Locate the folder where you want to store Clipboard information, then type a name such as **address** and click the OK button.

The next time you want to use this information in a document, start the Clipboard and choose Open from the File menu. Open the ADDRESS file (or any other Clipboard file you previously saved), then switch to your document and choose Paste on the Edit menu or press CTRL-V.



Tip: An even more interesting way to save this address for later use is to drag and drop it on the desktop. It becomes a “scrap” that you can drag back into any document later. See the section below called “Saving ‘Scrap Information’ for Later.”

The Drag and Drop Technique

Drag and drop is a great feature in Windows 95 applications that makes it easy to copy highlighted information from one place to another with a simple mouse stroke. With drag and drop, you can move text, pictures, or other information and paste it to a new location without using the Clipboard.

Try the following example to see how drag and drop works. You should still have a WordPad window open with the name and address you typed in the previous section. You’ll close all other windows, then open another copy of WordPad and arrange both WordPad windows horizontally so you can drag text from one window to another.

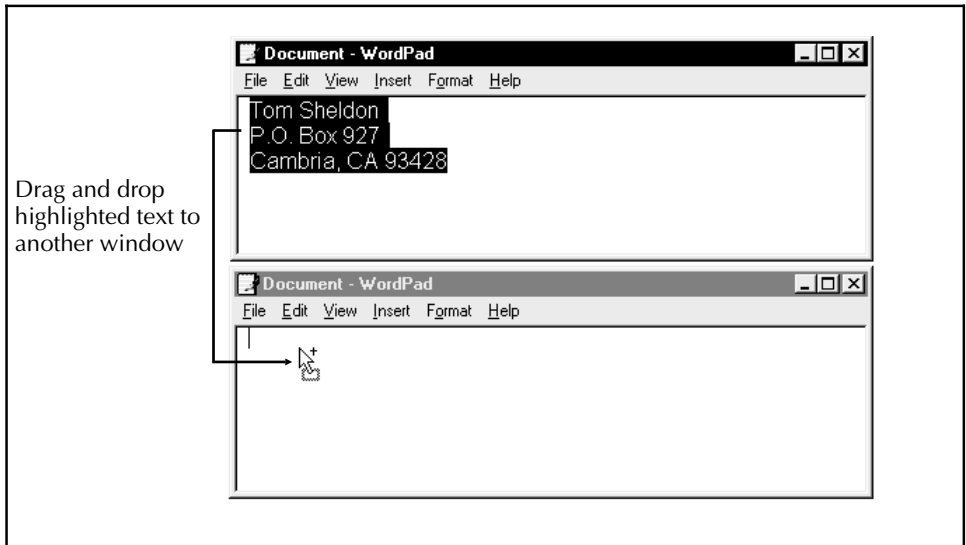
1. Start by closing all other windows so you can properly arrange the two WordPad windows horizontally.
2. Open another copy of WordPad and arrange both windows horizontally. To do this, right-click a blank portion of the Taskbar, then choose Tile Horizontally, as shown here:



3. Click the text and, still holding the mouse button, drag the text to the other window, as shown in Figure 6-11. As you drag the text, notice how the mouse pointer changes.
4. Release the mouse button. The text is copied into the other window.

Note that drag and drop is only practical when you can place windows side by side on the desktop. Sometimes it's easier to use the Clipboard copy and paste operations to transfer information between documents.

Moving text from one window to another with the drag and drop method
Figure 6-11.



Saving “Scrap Information” for Later

Here’s yet another way to save information you want to use later. Simply click and drag a block of highlighted text, a picture, or any other selected information onto the desktop. When you release the mouse, the information appears as an object called “Scrap.” The following icon appeared on the desktop when I dragged the name and address text from the WordPad window to the desktop. If the scrap contains text, its name will contain the first few letters of that text.



You can rename the scrap by double-clicking the name and typing a new one.

When you’re ready to use the information in a scrap, simply drag its object back into your document. You can also drag a scrap into a folder or double-click it to open it in an application and edit it.

Finding Out Which Fonts You Can Use

Windows 95 comes with a collection of fonts that you can use to format text in documents. For example, to format text in a WordPad document, you select the text, then choose Font from the Format menu. The Font dialog box appears so you can choose a suitable font, as shown in Figure 6-12.

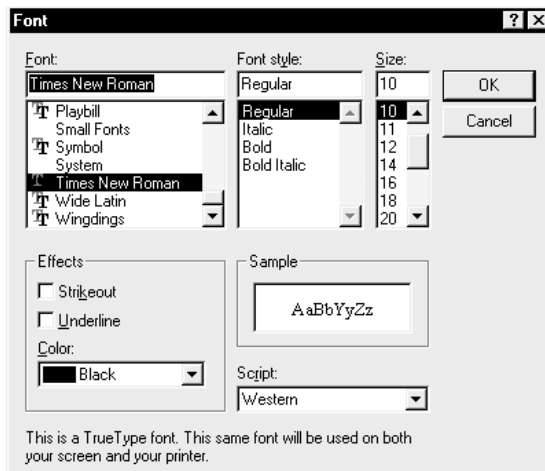
You can view and print samples of these fonts by opening the Fonts folder in the Control Panel. A printed list of fonts can serve as a catalog. Refer to it when you are designing a document. Here's how to view and print font samples:

1. Click the Start button, then Settings and Control Panel.
2. Double-click the Fonts folder. You'll see a window similar to the one in Figure 6-13.
3. Double-click any font file to see a sample page.
4. Click the Print button to print a sample.

To create a catalog of available fonts, repeat the last two steps for each font file in the window.

Choosing a Screen Saver

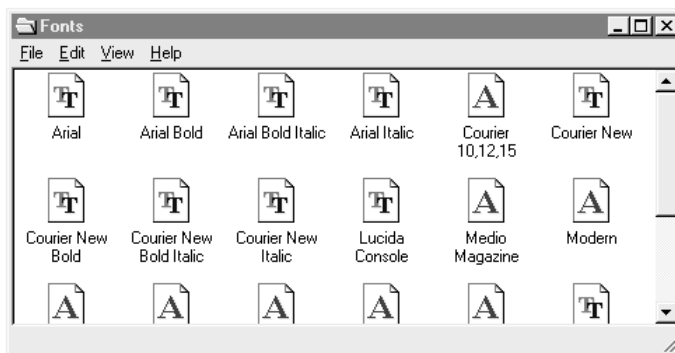
Screen savers blank your screen or display a moving image after a specified period of time has elapsed without your moving the mouse or tapping the keyboard. They were originally designed to prevent screen "burn-in," which



The Font dialog box
Figure 6-12.

The Fonts
folder

Figure 6-13.

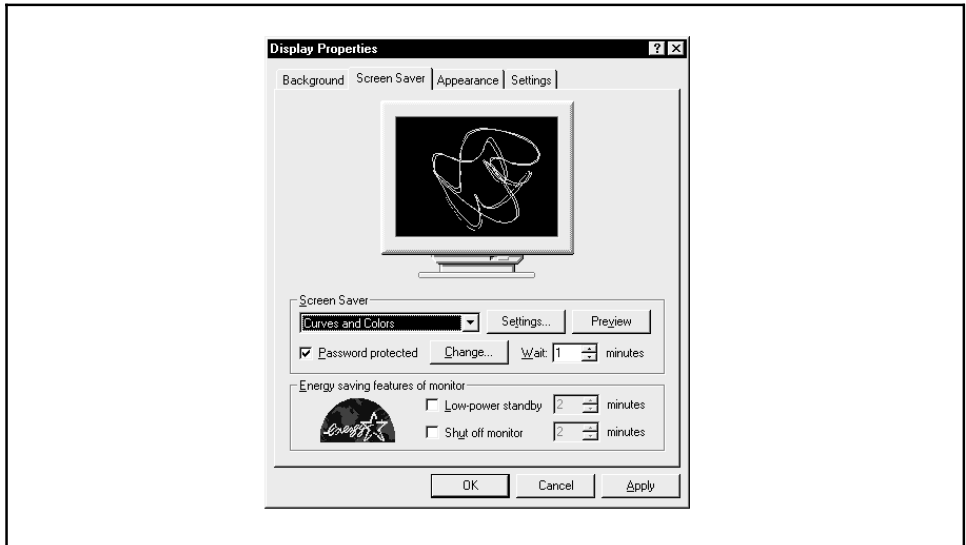


happens when the same image is left on the screen too long and the image impresses itself on the phosphorous lining inside the screen. Screen burn-in is not a problem with most modern monitors, but screen-savers are still used for aesthetic and security reasons. You can set up a password for your screen saver to prevent other people from disturbing your system while you are away.

To set up a screen saver, follow these steps:

1. Right-click a blank portion of the desktop, then choose the Properties option. Click the Screen Saver tab to display the dialog box in Figure 6-14.
2. To view different screen savers, click the down-arrow in the Screen Saver field, then press the DOWN ARROW key on your keyboard. A variety of different screen savers appears in the picture of the monitor.
3. When you find a screen saver you like, click the Settings buttons to customize the way it works. There are too many custom features to cover here (except for Passwords and the Scrolling Marquee, which are covered in the next two sections), but most settings are simple sliders to change speed settings, list boxes to change colors, or spin boxes to change numeric values that control special effects. Experiment! You're on your own.
4. Set the amount of time that passes before a screen saver appears in the Wait field. A wait period begins after your last mouse movement or keystroke. Click an up- or down-arrow key to change the minutes value.

Choosing a
screen saver
Figure 6-14.



Note: If you have an Energy Star monitor that automatically powers down after a period of non-use, set time-out values in the Energy saving field.

Password-Protected Screen Savers

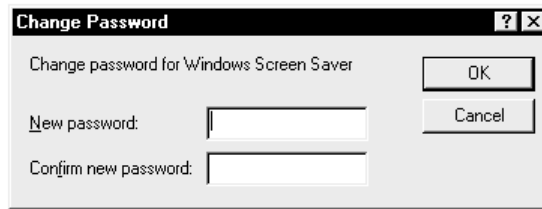
You can set a password for any screen saver by clicking the Password protected checkbox on the Screen Saver tab (see Figure 6-14). A password ensures that your system isn't disturbed by inquisitive people while you're away from it. For example, you could start a lengthy procedure that sorts a mail list, then go to lunch feeling secure that no one will disturb your system.



Caution: A password is not hacker-proof. A malicious hacker can turn your system off and restart it to bypass the password.

To set a password:

1. Click the Password protected checkbox in the Screen Saver page of the Display Properties dialog box pictured in Figure 6-14.
2. Click the Change button. You'll see the following dialog box:

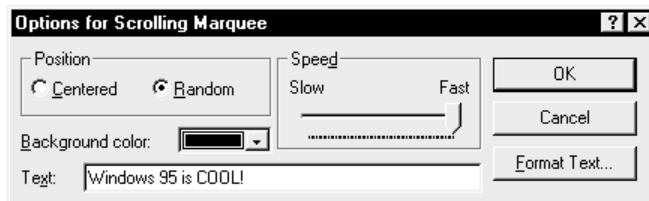


3. Type the same password in both boxes and click OK.

The next time your screen saver is activated, you need to type the password to reactivate your system. If you want to disable the password, simply remove the checkmark from the Password protected box pictured in Figure 6-14.

The Scrolling Marquee

You can create your own scrolling messages by choosing the Scrolling Marquee option at the bottom of the Screen saver list box. With Scrolling Marquee selected, click the Settings button to display the following dialog box:



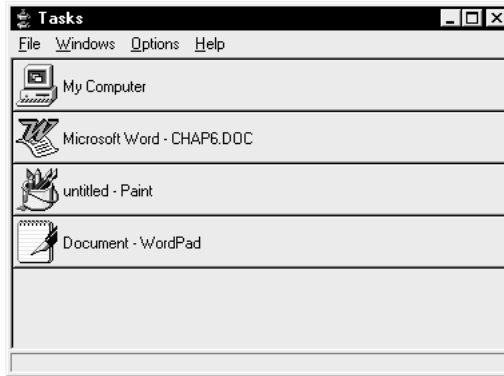
Type the text you want to display in the Text box. In the Position field, choose whether you want it to scroll across the screen or appear randomly. You can also set the scroll or random display speed in the Speed field and a background color in the Background color box. To change the font type, size, and color, click the Format Text button and choose options on the dialog box that appears.

The Tasks Utility for Switching Programs

The Tasks utility, which is shown in Figure 6-15, is a unique program for switching among the open applications on the desktop. It does the same thing as the Taskbar, but is more practical when you have a lot of programs open. You may have noticed the buttons on the Taskbar getting smaller every time you start a new program or open a new window. The Tasks utility has more room to display buttons.

The Tasks utility, used for switching among programs in Windows 95

Figure 6-15.



Tip: Users of Windows 3.1 will be familiar with the Tasks utility. It looks like the Task List that you see when you press CTRL-ESC in Windows 3.1.

The Tasks utility is not an option on the Start menu, but you can choose the Run option, then type **taskman** to start the utility. When it opens, you see a button for every running application or open window. Just click a button to switch to an application.

The File menu has options for running a new application and shutting down Windows 95. The Windows menu has options for organizing open windows. Here are the options on the Options menu:

- ⇒ **Always on Top** The Taskbar stays on top until it is minimized or closed.
- ⇒ **Re-minimize Windows** The last window you opened with the Tasks utility closes when you open a new window.
- ⇒ **Text in Buttons** The name of a window appears in the Tasks utility. When disabled, only the icon appears.
- ⇒ **Small Icons** Displays small icons and allows more buttons to be seen at once.
- ⇒ **Minimize on Use** The Tasks utility is minimized to the Taskbar.
- ⇒ **Status Bar** Displays a status bar at the bottom of the Tasks window.

You can add a startup option for the Tasks utility to the Start menu by referring to “Customizing the Start Menu” in Chapter 5, or you can create a shortcut for it on the desktop by following the steps in the section “Creating Disk Drive and Printer Shortcuts” in the same chapter.

This chapter will help you understand the Windows 95 object-oriented filing system. A lot of what computers are about is storing and retrieving information on the hard disk, so it's important to learn how the filing system works. In previous chapters you learned the basic concepts of working with folders and files. This chapter gets into the details of filenaming and file organization techniques to help you master your filing system.

Besides filenaming conventions used in Windows 95, this chapter also explains the old DOS conventions. Windows 3.1 used the old DOS conventions, and if you're working with files and applications that still use DOS conventions, you will need to know them.

How Data Is Organized in Windows 95

A hard disk is a large-capacity storage device where you store files. Files are the smallest unit of organization on the hard drive. They contain the letters you write, the pictures you draw, and the data you compile. Because hard drives can hold so many files, you organize them into directories and branching subdirectories. In Windows 95, directories and subdirectories are referred to as *folders* and *folders within folders*, or *subfolders*.

A folder is an organizational entity (like a container or file drawer) where files are stored. You use folders to organize files into distinct groups in the same way the drawers and folders inside a file cabinet are used to organize information.

Working with Files: The Basics

Files contain information like text, graphics, and numeric data. Initially they are created in the memory of the computer, but then they are saved to a disk storage device.

Follow these guidelines as you work with files in Windows 95:

- ⇒ Files within the same folder cannot have the same name. Windows 95 won't let you use a name that is already in use or copy a file into a folder if there is already a file in the folder with the same name.
- ⇒ Windows 95 supports 256-character filenames and upper- and lowercase characters. You can create descriptive filenames such as "Contract revision for Project X."



Note: DOS and Windows 3.1 programs can run under Windows 95, but they can't take advantage of the 256-character filenaming convention.

- ⇒ DOS filenames can be eight characters long and have a three-character extension. A period separates the filename from the extension. The extension helps categorize files. For example, .TXT files are text files, and .PIC files are picture files. Windows 95 does not show DOS filename extensions by default, but you can display the extensions if you choose to.
- ⇒ The drive and folder location of a file is important. In some cases, you need to tell a program or user where a file is located by describing its *path*. A path is the name of the drive, folder, and subfolder where a file is stored.



T ip: In a graphical user interface like Windows 95, it's not necessary to type out the name of a path. You can use the mouse to point in a dialog box to the drive and folder where a file is stored.

Types of Files

There are many different types of files. Files are categorized by the type of information they hold. The different file categories are discussed next.

Program Files *Program files* contain computer-readable code written by programmers. If you viewed a program file, you would see garbled characters that make no sense to you, but make a lot of sense to your computer. Program files have the filename extensions .COM and .EXE. You can double-click most program files to start, or execute, a program. Here are some sample program icons you'll see when working with Windows 95. Notice the icon called Ping.exe. It is a generic icon that can represent a Windows or a non-Windows program.



Support Files Some programs store information in auxiliary *support files*, but you can't execute or start these files. Common support files have the extensions .OVL (overlay), .SYS (system), .DRV (driver), and .DLL (dynamic-link library). Some of the support files for Microsoft Word for Windows are shown below. The executable program itself is on the left. The remaining four icons are a font file, a dynamic-link library file, a help file, and a registration file.



Text Files *Text files* contain alphanumeric characters that follow the American Standard Code for Information Interchange (ASCII) format. In plain English, that means they have text that is accessible by a wide range of programs, even programs that run on non-Windows computers. You can share text files with other users and even read them yourself. Here are a few examples of text files:



The Relnotes.rtf file on the left is a *Rich Text Format* (RTF) file. It contains ASCII characters as well as special formatting codes for fonts and paragraph styles. Many applications can read and convert RTF files.

Graphics Files *Graphics files* contain visual or graphic information. A *bitmap graphic file* contains information about where to place the dots that together form images on the screen. The Windows 95 Paint program creates bitmap files and saves them with the filename extension .BMP, as shown here:



Vector graphics files contain series of commands for creating images instead of dots. When you open a vector file, the commands are replayed to re-create the image.

Multimedia Files Multimedia files hold sound and video information in digital form. Common multimedia icons are shown here:



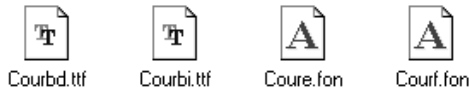
The file Passport.mid is a MIDI (Musical Instrument Digital Interface) file that holds instructions for playing a song on a MIDI-compatible keyboard or sound device. The file Skiing.avi is an .AVI (audio video interleaved) file that plays a video sequence. The file Tada.wav is a digitally stored sound file in the waveform (.WAV) format that plays back a short, recorded sound.



Tip: You can insert multimedia files in text documents and you can record a voice message into a file and send it to another user.

Other Data Files Data files contain numbers, names and addresses, and other information created by database and spreadsheet programs. The most popular data file formats can be read by a variety of different programs. For example, a dBASE data file can be read by Microsoft Excel.

Font Files Windows 95 comes with a large selection of fonts. The fonts are located in the Fonts folder, which you see if you open the My Computer window. Here are some examples of font files. The .TTF files are TrueType fonts and the .FON files are bitmap fonts files. .TTF fonts are high-resolution display fonts that print at a high-resolution on most printers.



DOS Filenaming Conventions

Once you understand filenaming conventions and filenaming strategies, you will be well on your way to mastering Windows 95. Windows 95 supports the filenaming conventions of DOS and Windows 3.1, as well as its own long filenames (up to 256 characters). Because Windows 95 runs older DOS and Windows 3.1 applications, you may be forced to use their older filenames, so they are discussed here.



Note: It is necessary to discuss the older DOS filenaming convention because you might need to create files in Windows 95 that you copy to a DOS computer, or you might receive files from a user of a DOS computer.

When working with Windows 95, you can take a relaxed approach to naming and organizing files because its filenaming conventions let you create very descriptive filenames. But if you're creating and working with files from many different applications, you might need to develop a filenaming strategy. A few suggestions are presented here. As you read this section, you will become familiar with file systems in general and with techniques you can use to organize your own system.

8 + 3 = A DOS Filename

DOS filenames are, unfortunately, limited to an eight-character filename and a three-character extension. Having only 11 characters to work with made it more important to follow filename strategies in DOS (and Windows 3.1) than in Windows 95.

Here's an example of a DOS filename with an eight-character name and a three-character extension:

NEWSINFO.TXT

Of course, you can use fewer characters in the name and extension if you like. But if you type more than eight characters in the name or three in the extension, DOS will truncate them.

DOS Paths

Another important aspect of a filename is its location, or path. In DOS, a *path* specifies the drive and directory (or folder) where a file exists. For example, if the NEWSINFO.TXT file is in the WINWORD directory on drive D, its complete path is:

D:\WINWORD\NEWSINFO.TXT

The backslashes (\) separate the directory and filename information, and a colon always follows the drive letter. If you are working in the same directory as a file, you don't need to specify a path, but if you want to access a file in another directory, you must specify its path. This same drive and path naming strategy is used for Windows 95 files, except that you would refer to WINWORD as a folder in our example, not as a directory.



Note: In Windows 95, you don't need to type the path and filename in most cases. You open a dialog box, then use the mouse to browse through the drive and folder structure until you locate the file you're looking for.

DOS Filename Extensions

A filename extension can help describe a file's contents, the program that created it, and possibly the type of data it stores (text, graphics, or numbers). Table 7-1 lists some commonly used filename extensions. Most programs automatically add an extension to a file when you save it, unless you specifically type a different extension.

Extension	Type of File
.AVI	Audio video interleaved file
.AWP	Microsoft At-Work Fax key file
.AWS	Microsoft At-Work Fax signature file
.BAK	A backup file automatically created by some applications when you edit a file
.BAT	Batch file used in MS-DOS environment to automate routines
.BMP	Bit-mapped file created in Windows 95 Paint or other program
.COM	Command file (executable program file)
.DAT	A generic extension for files that contain data in some form
.DCX	Microsoft At-Work Fax view file
.DLL	Dynamic-link library file (program file)
.DRV	Driver file (to support printers, modems, etc.)
.FON	Font file
.HLP	Help file
.INF	Information file
.MID	MIDI (Musical Instrument Digital Interface) file
.MMF	Microsoft Mail file
.RTF	Rich Text Format (a standard for formatting text documents)
.SCR	Screen saver file
.TTF	TrueType font file
.TXT	Text file
.WAV	Wave file create by Sound Recorder or another sound application

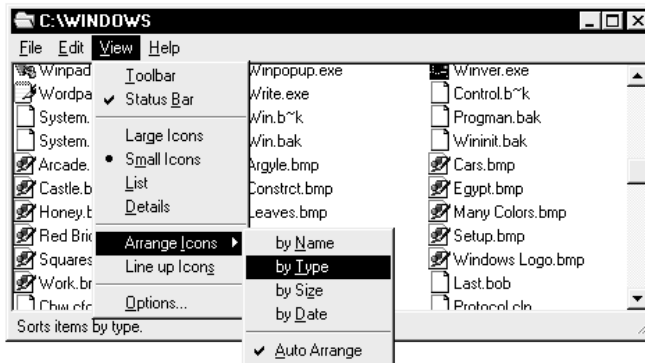
Common
Filename
Extensions in
DOS and
Windows 95
Table 7-1.

Listing DOS Files by Extension

Filename extensions are useful when listing files. When files are alphabetically organized by their extension, you see all the program files grouped together, and all the document files grouped into categories related to the applications that created them.

Try the following exercise to see how filename extensions can be useful for organizing file listings:

1. In Chapter 6 under the heading “Organizing Shortcuts in Folders on the Desktop,” you created a desktop shortcut to your Windows folder. Double-click it now. When the window opens, the files may be listed in alphabetical order. (If you don’t have the Windows shortcut on your desktop, double-click the My Computer object, then double-click the drive that holds your Windows files (usually drive C), and then double-click the Windows folder.)
2. Click View on the menu bar, then Arrange Icons, and choose by Type on the cascading menu:



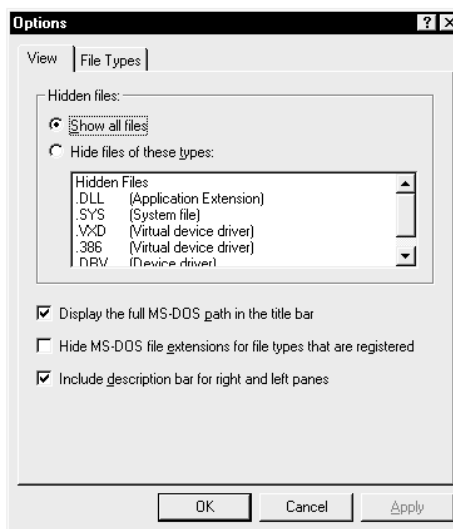
3. Choose Small Icons so you can see more objects in the window at one time.

If you don’t see filename extensions as shown in this illustration, you need to change the filename extension setting. Follow these steps:

1. Still in the Windows folder window, choose Options from the View menu.
2. Click the View tab to see the dialog box shown in Figure 7-1.
3. To disable the field labeled “Hide MS-DOS file extensions for file types that are registered,” click the checkbox to remove the check mark.

The objects in the window are now organized in alphabetical order within their filename extensions. If you scroll through the list, you’ll see the files with the same filename extensions grouped together. This arrangement comes in handy when you’re looking for document files you want to open in a particular folder. It also comes in handy if you want to select a group of files and copy them to another drive or delete them.

Viewing
filename
extensions
Figure 7-1.



DOS Filenaming Strategies

This section describes a filenaming strategy that is useful if you've created a lot of similar files with the same application. It is especially suited for the eight-character filename limitation of DOS. If you're using applications that support Windows 95's long filenames, this information is not essential, but it will give you background information on filenaming strategies.

Always create a filename that describes and categorizes the contents of the file. Try to create filenames that make sense to you *and* that will make sense to others. Simple names like NOTE1.TXT, NOTE2.TXT, and NOTE3.TXT are meaningless if you create dozens of notes. You'll soon forget what is in each file and need to open each one to view its contents.

Let's consider a filenaming strategy for a set of report files. A name like JANREPT.TXT certainly indicates that the file is a report for January, but if there are several report files for January, you'll need more specific filenames. Following are some examples of a filenaming strategy that organizes monthly report files created with the Excel spreadsheet program. At first, this file list might look intimidating, but if you study it you'll find that it makes a lot of sense. You might want to imitate it for your own file system.

RA950830.XLS
RB950830.XLS
RC950830.XLS
RA950928.XLS
RB950928.XLS
RC950928.XLS

As for the first letter, the *R* means that the files are reports. Budget files might start with a *B*. The second letter indicates whether the report covers department A, B, or C. The remainder describes the reporting year, month, and day. The filename extension XLS is added by Microsoft Excel. We'll work more with these example files in a moment.



Note: In the foregoing strategy for naming files, putting the year first, then the month, then the day for the report date makes it easier to sort the files in date order.

Listing Files with Wildcard Characters

There are different methods you can use to list files. When files follow a common filenames strategy like the one described above, you can narrow down file listings so that only files you are interested in are displayed. You can then locate a file or the files you want to open, copy, move, or delete.

Wildcard characters can help you narrow file lists. You can use wildcard characters as substitutes for a letter or a group of letters when specifying filenames. The two wildcard characters are:

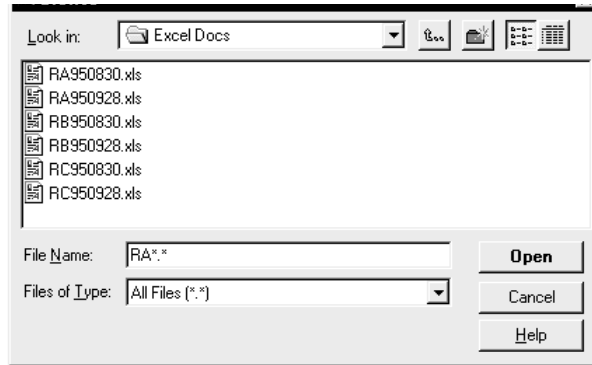
Wildcard	Name	What It Does
*	Asterisk	Substitutes for a set of characters
?	Question mark	Substitutes for a single character



Tip: You can also use wildcard characters when working with Windows 95 browse dialog boxes and when working with the Windows 95 Explorer.

Here's an example of using the asterisk wildcard character to list the report files described in the previous section. Let's say you start Excel and choose the Open option on its File menu. The Browse dialog box shown in Figure 7-2 appears.

A list of Excel files
Figure 7-2.



If you type **RA*. *** in the File Name field and press ENTER, files beginning with the letters “RA” will be listed in the file window, to the exclusion of filenames that begin with “RB” or “RC”:

RA950830.XLS
RA950928.XLS

The ? wildcard character holds the place of a single character, not a set of characters. If you type **R???08*. *** in the File Name field and press ENTER, only files beginning with “R” and having “08” as the fifth and sixth letters are listed:

RA950830.XLS
RB950830.XLS
RC950830.XLS

Finally, if I type **RA???08*. *** and press ENTER, only one file is listed:

RA950830.XLS

Of course, the wildcard character strategy works best when there are many more files than the six examples I created here. Notice how the question mark serves as a placeholder—that is, any character may occupy its position. The asterisk, on the other hand, is used to represent any *group* of characters in the filename or the extension.

Windows 95 Filenaming Conventions

Windows 95 allows filenames to be as long as 256 characters. Applications designed for Windows 95 can access and save files with long filenames. Older DOS and Windows applications can still access the files, but the filenames are truncated to an eight-character DOS filename and a three-character extension. This part of the chapter discusses how Windows 95 converts its long filenames to DOS filenames if you copy files to a DOS system or if you view long filenames from a DOS application. It also explains filenaming rules in Windows 95.

Windows 95 Filenaming Rules

Here are the filenaming rules for Windows 95:

- ⇒ You can have a maximum of 256 characters in file and folder names.
- ⇒ You can use multiple period-separated extensions, if necessary, to create filenames like the following:

Report.Sales.Smith.June95

- ⇒ Names can include spaces but not these symbols:

? \ * " < > |

- ⇒ Windows 95 preserves the uppercase/lowercase format of the name you specify but does not use case to distinguish between filenames. For example, Myfile.doc and MYFILE.DOC are considered the same filename.
- ⇒ You can use wildcard characters (? and *) when searching for and listing filenames.

How Windows 95 Long Names Are Sliced Into Short DOS Names

The following table shows eleven Windows 95 file or folder names. You can use these names as examples for your own filenames. The right column shows how the Windows 95 long filename is converted to a DOS name.

Windows 95 Filename	DOS Conversion
REPORTS.SALES.SMITH.JUN95	REPORTSS.JUN
REPORTS.SALES.SMITH.JUL95	REPORTSS.JUL
REPORTS.SALES.SMITH.AUG95	REPORTSS.AUG
REPORTS.SALES.JONES.JUN95	REPORT~1.JUN

Windows 95 Filename	DOS Conversion
REPORTS.SALES.JONES.JUL95	REPORT~1.JUL
REPORTS.SALES.JONES.AUG95	REPORT~1.AUG
ThisIsALongFilename	THISISAL
ThisIsALongFilename.TXT	THISISAL.TXT
Lecture notes on history conference	LECTUREN
Cairo conference notes	CAIROCON
My Documents Folder	MYDOCUME

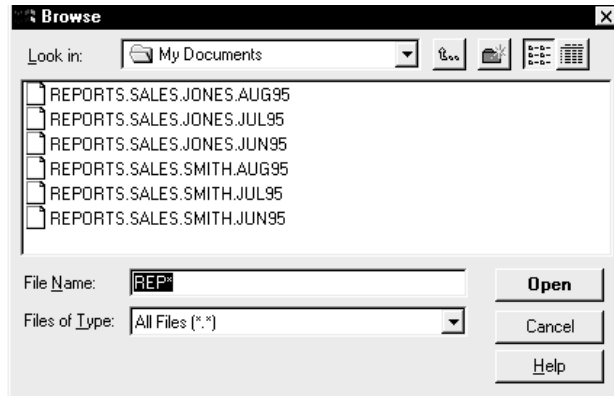
Notice that the first six Windows 95 names use periods to separate the long filename into four parts. Study the DOS conversion of these filenames:

- ⇒ In the first three examples, the first eight characters of the long filename are used in the DOS filename. Windows 95 then assigns an extension using the first three characters after the last period in the long filename.
- ⇒ In the fourth through sixth long filename on the list, if the first eight characters are used in the DOS filename conversion, duplicate DOS filenames would be created. Consequently, only the first six characters are used and ~1 is added to the end. If another set of files with similar long filenames existed, Windows would increment the number, so you would see DOS filenames like REPORT~2.JUN and REPORT~3.JUN.
- ⇒ In the last five long filenames, notice how Windows 95 allowed uppercase and lowercase characters, but the DOS equivalents were converted to uppercase. Also notice how Windows 95 handles period separators and spaces. Periods are used to separate filenames and extensions, as seen in the DOS filename THISISAL.TXT. Spaces are dropped, as seen in the last three examples.



Tip: If you're working in a DOS application and you need to access a Windows 95 folder that has spaces in its filename, just drop the spaces and specify only the first eight characters of the filename.

Using wildcards to list files with long filenames
Figure 7-3.



Note: Be sure to take filename conversion techniques into consideration if you plan to move Windows 95 files to a DOS computer.

Filenaming Strategies for Long Filenames

The filenames you saw in the list above illustrate a practical way to name your own files. You can use the period separator in place of a space, but the period is much more than that. The period separates different parts of the filename to help you create a filenaming strategy that fits your own needs or those of your organization. The first six filenames in the list have four “subnames,” each separated by periods. The first subname basically describes the type of file—in this case, **REPORTS**. The second component describes the type of reports—**SALES** in this case. The third component holds the name of the person for whom the report was written. The last component holds the date for the file. You might create a fifth component for filename extensions to describe which program was used to create the file, such as **XLS** (Excel) or **DOC** (Word for Windows).

The period separators are critical when it comes to listing files. If you open a Browse dialog box like the one in Figure 7-3, you can use wildcard characters (* and ?) to list specific files. In the dialog box in the figure, I typed REP* in the File Name field to list all the files that have REP as the first three characters.

If I had typed **REPORTS.*.JONES.*** in the File Name field, I would have seen this listing, which shows all the report files for Jones instead of Smith and Jones:

```
REPORTS.SALES.JONES.AUG95  
REPORTS.SALES.JONES.JUL95  
REPORTS.SALES.JONES.JUN95
```

To see all the report files for August of 1995, I would type either **REPORTS.SALES.*.AUG95** or just ***AUG95** and see this listing:

```
REPORTS.SALES.JONES.AUG95  
REPORTS.SALES.SMITH.AUG95
```

As an example of using the question mark wildcard character, you could type ***.JONES.???95** and the browse window would then show any file for Jones in 1995.

In the next chapter, you'll learn more about the file system and how to implement the filenaming strategies you learned here.

This chapter explores the Windows 95 file system even further. It explains how to work with folder windows on the desktop and the Windows Explorer. We'll switch between working on the desktop and with the Windows Explorer so you can see which method is best for you.

Here's what you'll learn about in this chapter:

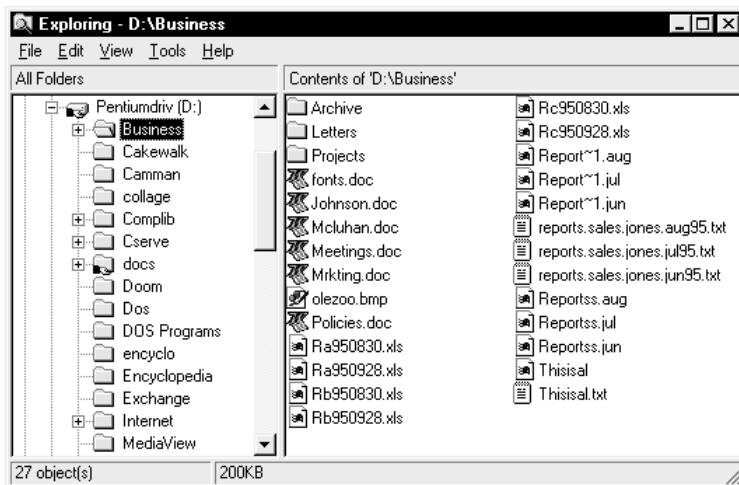
- ⇒ How to open and use the Windows Explorer.
- ⇒ How to see how much disk space is available on drives in your system
- ⇒ How to create, rename, and delete folders
- ⇒ A quick way to create files, as well as search for files on your system
- ⇒ How to search for files and folders on your computer

The Two Ways of Accessing the File System

The Windows Explorer, a file management utility, provides one of the best views of your file system. It is shown in Figure 8-1. In the left window pane, the Business folder is selected. The contents of the Business folder are displayed in the right window pane. You can view the contents of another folder by clicking it in the left pane. In contrast to the Windows Explorer, the Windows 95 desktop provides a view of individual folders in a window, as shown in Figure 8-2. Note that to see the Business folder, you first open

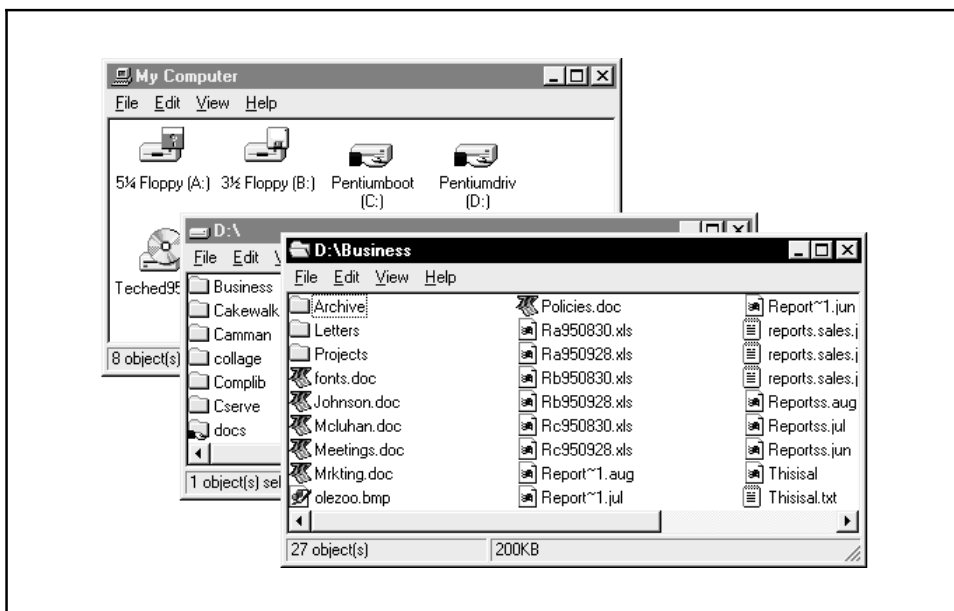
The Windows Explorer, with a highlighted folder in the left window pane and the contents of the folder in the right window pane

Figure 8-1.



When opening windows on the desktop, you first open My Computer, then a drive window, then a folder window, then a folder

Figure 8-2.



the My Computer window, then open a drive window where the Business folder is located, and finally open the Business folder to see its contents.

When you need to open, copy, move, delete, or reorganize files, you can work in the Explorer or work with folders directly on the desktop. The choice is yours. The main advantage of using the Explorer over desktop folder windows is that you can work with the contents of a window in the right pane and the entire file structure of your computer in the left pane. This makes it easy to copy files on the right to a disk drive or folder on the left. You also don't need to open a bunch of windows like you do on the desktop.



T ip: Use desktop windows when you need to access a folder often. You might want to create a shortcut to the folder on the desktop, then open it whenever you need to access the files in it.

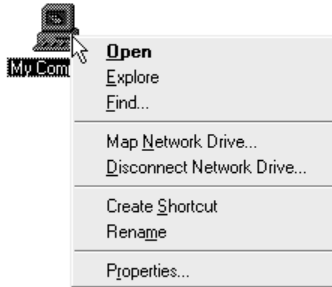
Inside the Windows Explorer

In previous chapters, you mostly worked with desktop folders as you copied, moved, created shortcuts to, and did other things to folders and files. Beginning with this chapter, you'll see how the Explorer can assist you.

Starting the Explorer

There are a number of ways to start the Explorer:

- ⇒ Click the Start button, then Programs, and then Windows Explorer.
- ⇒ Right-click the My Computer object and choose Explore from the menu, as you see here. The view of the file system that Explorer presents starts with the desktop.



- ⇒ Right-click any drive object and choose Explore. Explorer's view starts with the drive.
- ⇒ Right-click any folder and choose Explore to see a view of the file system starting with the selected folder.

Open the Explorer now by right-clicking the My Computer object and choosing Explore. An Explorer window similar to the one you saw in Figure 8-1 appears.

Moving Around Inside the Explorer

This chapter covers techniques for working with desktop folder windows and the Explorer. Here are some of the basic steps for working with the Explorer:

- ⇒ **Viewing folder contents** Click an object in the left window pane to display its contents in the right pane.
- ⇒ **“Expanding” a folder** If a folder contains other folders, a plus sign appears to the left of its name. Click the plus sign to expand the folder structure. Try clicking the plus sign for your Drive C to see how this works.

- ⇒ **“Collapsing” a folder** When you expand a folder, a minus sign appears to its left. Click the minus sign to collapse the folder structure.
- ⇒ **Scroll the left pane** This subtle feature is what makes folders and files so accessible in Explorer (as you’ll see in the three steps at the end of this section). You’ll appreciate it more as you learn techniques for copying and moving files. When you expand folders in the left pane, the list becomes long and you’ll need to scroll through it. Collapse any folders you don’t need open to reduce the length of the list.



Note: You can change how files are listed in Explorer’s right pane by choosing options on the View menu or clicking buttons on the toolbar, as explained later under “Different Ways of Viewing Folders.”

Working with Explorer is like working with most windows and objects, except that you get a hierarchical view of the filing system. You can right-click folders to see their menus and you can click and drag objects from one place to another.

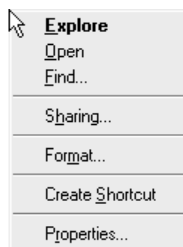
The best thing about the Explorer is that it makes copying and moving objects between drives and folders easier. For example, say you want to copy a file from a folder on drive C to a folder on drive D (or a folder on a remote computer). To do this, follow these steps:

1. Click the folder that contains the file you want to copy. The file appears in the right pane.
2. Back in the left pane, locate the folder where you want to copy the file by scrolling the hierarchical list.
3. When you’ve found the folder, drag the file from the right pane and drop in on the folder in the left pane. It’s that easy!

Working with Drives

In this section, we look at some of the features and options for working with drive objects. You can open the Explorer or open the My Computer window to do the exercises presented here, but we’ll use the Explorer.

Scroll through the drive and folder tree in Explorer’s left window pane to locate the Drive C object, then right-click it with the mouse. You’ll see a menu similar to the following:



The options on disk drive menus are listed below. Some options are not always available, and some—such as Disconnect, Eject, and Lock—are grayed out if they are not applicable to the drive you selected.

- ⇒ **Explore** Starts the Windows 95 Explorer with a view of this drive.
- ⇒ **Open** Opens a separate window for viewing the contents of the drive.
- ⇒ **Find** Opens the Find utility, which helps you locate folders and files on the drive. Find is discussed later in this chapter.
- ⇒ **Sharing** Opens the Sharing dialog box so you can make this drive accessible to other people whose computers are connected to your computer. Sharing is discussed in Chapter 14.
- ⇒ **Format** Opens a dialog box so you can initialize diskettes and hard drives for use on your computer. Formatting is covered in Chapter 24.
- ⇒ **Create Shortcut** Creates a copy to the drive object on the desktop.
- ⇒ **Properties** Displays the Properties dialog box so you can view and change information and settings for the drive. See the section “Viewing and Changing Drive Settings” later in this chapter.

If the drive is a network drive or a removable media drive, the following options appear on the menu as well:

- ⇒ **Disconnect** If your system is connected to a network, you may see drive icons for drives that are located on remote network servers. This option will appear on the menu of network drive icons so you can disconnect the drive.
- ⇒ **Eject** This option ejects a removable disk so you can insert another disk. It is grayed out if the disk is not removable.
- ⇒ **Lock** This option locks a removable media disk. It is grayed out if the disk is not removable.

Viewing and Changing Drive Settings

Right-click the Drive C object again and choose Properties on the menu. You'll see a dialog box similar to the one in Figure 8-3. From this dialog box, you can change the name of the drive by typing a new name in the Label field and clicking the OK button. In the lower half of the dialog box, you can see how much disk space you have, how much is in use, and how much is available.

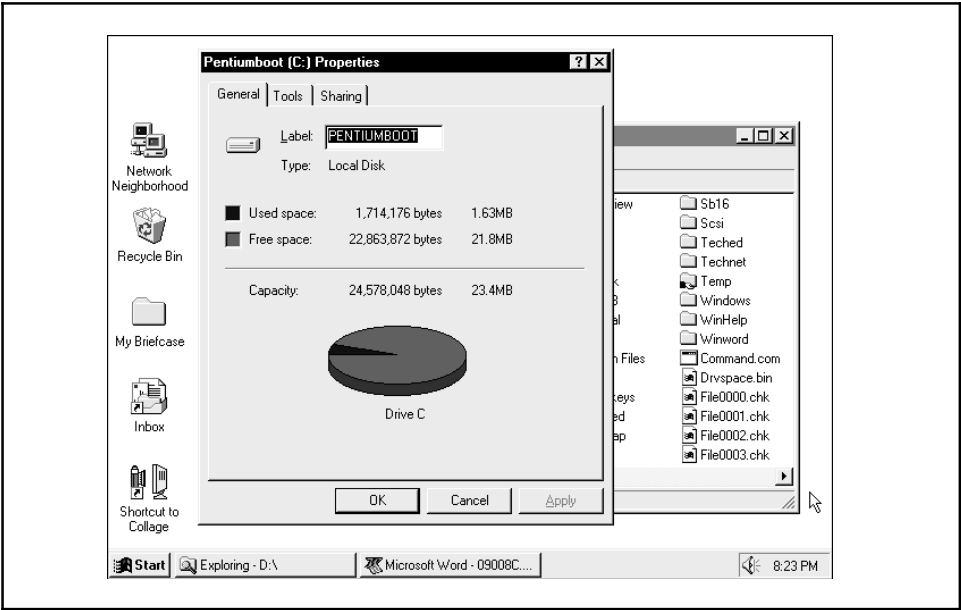


Note: The sharing option appears on the Properties dialog box if you are connected to a network.

Click the Tools tab in the Properties dialog box to display the dialog box shown in Figure 8-4. This is where you go if you want to perform diagnostic checks on the drive, back up the files on the drive, or defragment the drive to improve its performance. Refer to Chapter 24 for more information on these options before proceeding.

The General tab, where you can change the name of the drive and see how much disk space it has left

Figure 8-3.



The Tools tab, for performing diagnostic checks on the disk

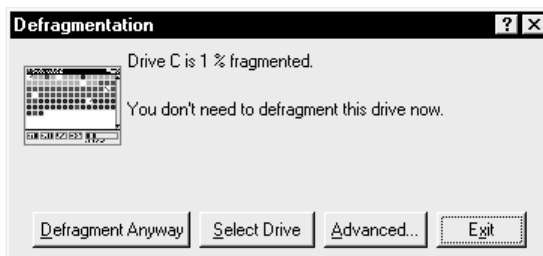
Figure 8-4.



About Defragmenting

You might be anxious to defragment your drive. Defragmenting boosts drive performance on a system that has been in use for some time by rearranging files to improve access. If you just installed your computer and Windows 95, the drive is probably already providing good performance. Drives become fragmented over time as you erase old files and add new files. To determine if your drive needs formatting:

Click the Defragment Now button on the Tools tab. In a moment, you'll see the following dialog box:



In this case, my drive C is only 1 percent fragmented, so it's not worth my time to execute the procedure, although I could click the Defragment Anyway button.

If your drive is over 25 percent fragmented, you might want to consider defragmenting it. Refer to Chapter 24 about disk drive utilities for more information. Otherwise, click the Exit button. You're returned to the Properties dialog box, where you can click OK or Cancel.

Working with Folders

Disk drives are organized into folders, and folders can contain files or other folders. A typical disk drive contains a "tree" of folders and subfolders. You browse through the tree by opening folder windows on the desktop or by using the Explorer. Both techniques are discussed in this section.

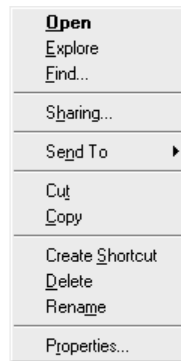
Menu Options for Working with Folders

Before going further, you need to be aware of the menu options that are available for folders. What you see on a menu depends on what you select, as described below. The following exercises illustrate the different folder menus you see when working with folder windows on the desktop or folders in Explorer.

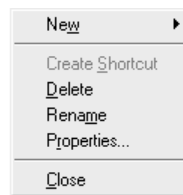
- ⇒ Open the My Computer window, then double-click a drive object and left-click a folder in the window that appears. Now choose File menu on the window's menu bar as show here. The main point is that this menu has the New option so you can add a new folder or object to the window.



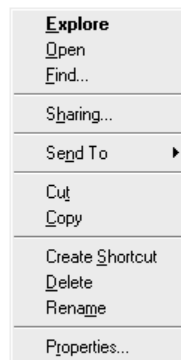
- ⇒ Next, right-click the folder you left-clicked above to open its context menu (as shown in the following). Now you're working with the folder you selected, not the window. Notice the subtle differences between the menus. The New and Close options are gone, but the Cut and Copy options are available. You can cut this folder and paste it elsewhere (a move) or copy and paste it elsewhere as discussed in the next chapter.



- ⇒ Now, open Explorer and click the plus sign next to Drive C to expand its folder list, then select a folder in the left pane and choose File on the Explorer's menu to display these options. Note the New option, which you can use to add a new folder.



- ⇒ In Explorer, it's best to right-click the folder in the left pane to display the full set of folder options, as shown here:



Just keep these methods of working with menus in mind as you work with desktop folder windows and the Explorer. Make sure you've selected the object you want to work with; otherwise, you might not see menu items appropriate for what you are trying to do.

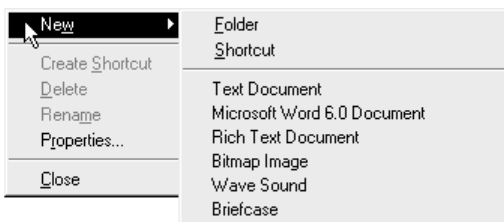
Creating, Renaming, and Deleting Folders

In this section, we'll see how to create, rename, and delete folders. The options for doing this are located on the menus described in the previous section. We'll create a folder called Temporary on drive C, then rename it, and finally delete it.

Creating a New Folder

You can create a new folder directly on the desktop, at the root level of a disk drive, or within another folder. You open a drive object (like Drive C) or another folder and create a new folder within for storing programs or files. You can even create a folder on the desktop called "Shortcuts" and put all your shortcuts in it. Following are the steps for creating a new folder. (If you're ambitious, do these steps first from the desktop, then from Explorer.)

1. If you're working on the desktop, double-click the Drive C object (or open My Computer and double-click Drive C) to open its window. If you're working in the Explorer, just click the Drive C object in the left pane.
2. Choose New from the File menu, then Folder from the cascading menu shown here:



A new folder appears in the window with its name highlighted. In Explorer, you see the new folder in the right pane.

3. Type **Temporary** and press ENTER to overwrite the default name.

In Explorer, the folder appears in the right pane because the Drive C object is selected in the left pane. However, after creating the folder, you can click the + button next to the Drive C object in the left pane, then scan down the folder tree to locate the new Temporary folder. I mention this so you can see the relationship between the left and right panes.

Renaming a Folder

There are two ways to rename a folder:

- ⇒ Click the folder once, then click its name. The blinking cursor appears in the name field so you can edit the name.
- ⇒ Right-click the folder and choose Rename from its menu.

In Explorer, you can click a folder in the left or right pane. Either way, the name is highlighted so you can just type a new name and press ENTER.

Deleting the Folder

Deleting a folder removes all files and subfolders within it. There are several ways to delete a folder:

- ⇒ Left-click the folder, then press the DELETE key on the keyboard.
- ⇒ Right-click the folder and choose Delete from the menu.
- ⇒ Right-click and drag the folder to the Recycle Bin, as shown in Figure 8-5.

In the first two cases, a message box appears to verify that you really want to delete the folder. In the last case, the folder drops into the Recycle Bin. Chapter 9 describes how to use the Recycle Bin and how to recover files and folders you dropped into it.



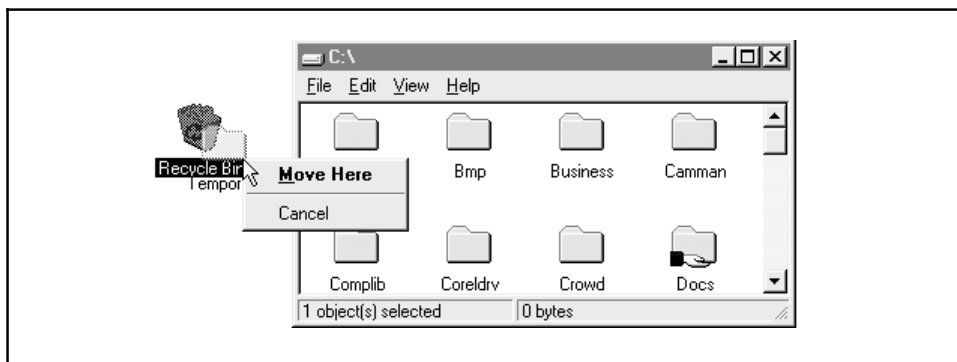
Note: All deleted files go into the Recycle Bin so that you can recover them—if you don't wait too long.

Different Ways of Viewing Folders

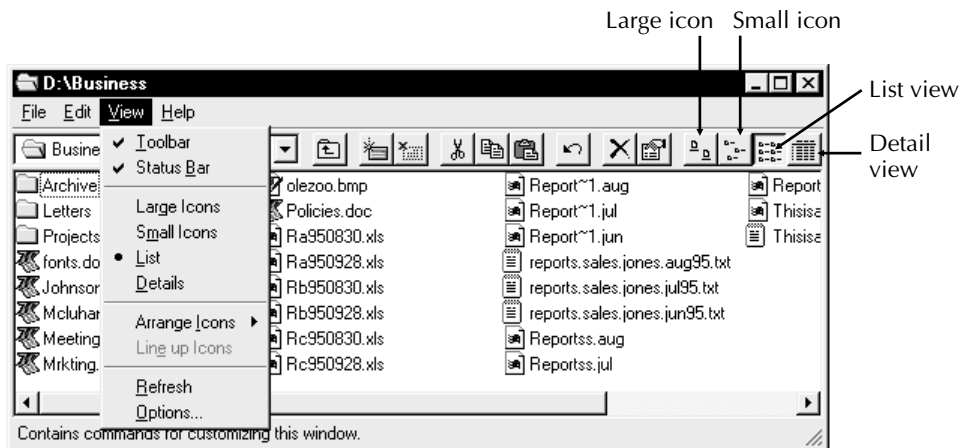
This section shows you how to change the way files are listed. You already know how to change folder views if you worked through previous chapters. It's important to understand the significance of each view, and that is what is covered here. You'll also see how to change some settings for windows by choosing Options on the View menu.

Deleting a folder by tossing it in the Recycle Bin

Figure 8-5.



Here's a picture of the View menu for a desktop folder. You see the same menu if you select a folder in Explorer and choose View. Notice the similarities between the toolbar buttons and the View menu options:



Here are the options on the View menu:

- **Large Icons** Displays the icons as large as possible. This option is for people who identify programs by their icon. In this view, you do a lot of scrolling if the window has a lot of objects.
- **Small Icons** Displays objects in the window as small icons so you can see more objects at once. With this view, the icons are arranged across the screen and a vertical scroll bar appears so you can scroll vertically in the window.
- **List** This view is the same as Small Icons, except that the icons run down the screen and you scan horizontally instead of vertically.
- **Details** Displays small icons, along with information about each folder and file in the listing. In this view, you can adjust the width of the columns (how to do so is explained next).
- **Arrange Icons** Opens a cascading menu where you can choose to arrange the icons in the right window pane by name, type, size, or date. The Auto Arrange option causes the icons in the window to automatically rearrange whenever you move objects around.
- **Line Up Icons** Arranges the icons in the window in a tidy fashion.
- **Refresh** Updates the window to show newly-added files.
- **Options** Provides options for viewing folders. See “Options for Viewing Folders” a little later in this chapter.

Detail View

In Detail view, which you set by choosing Details on the View menu, information about the folders is given in four columns—the folder name, its size, its file type, and the date it was last modified. You can adjust the width of the columns. To do so, point with the mouse at the column titles and position it over a column divider as shown in Figure 8-6. The mouse pointer converts to a double-headed arrow. Click and drag left or right to adjust the width of a column.



Tip: In Detail view, you can click the button that appears above each column to sort the file listing on that column.

Options for Viewing Folders

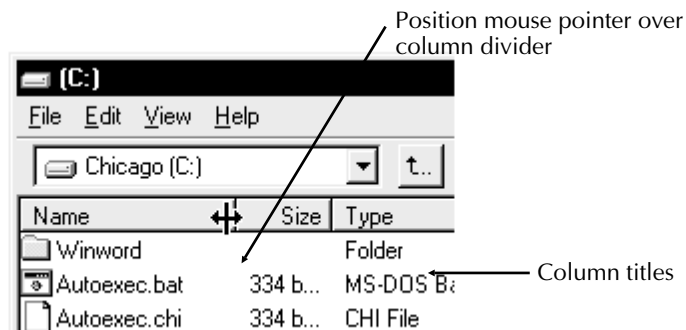
You can change the options of open folders on the desktop by choosing Options on the View menu. The dialog box shown in Figure 8-7 appears.



Note: Changes to the Options dialog box affect all windows you open on the desktop.

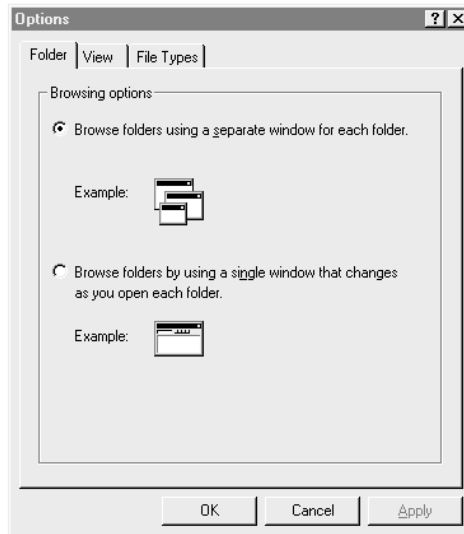
Changing the width of a column in a window by clicking and dragging the edge of the button

Figure 8-6.



Changing how folders appear as you browse from one to the next

Figure 8-7.



The Folder tab has two options that control how windows are handled as you browse from one folder to the next. If you choose the top option (the default), a new window is opened every time you double-click a folder. If you choose the bottom option, the contents of the existing window are *replaced* with the contents of the folder you selected and any settings in the previous window—such as the way files are listed—are used in the new window list.



Tip: The second option helps reduce screen clutter caused by opening too many windows on the desktop. Set the top option if you want to see the contents of other folder windows so you can compare files or copy files from one window to another.

Click the View tab to display the dialog box in Figure 8-8. It offers options for deciding what files should be seen in folder windows:

- **Show all files** Click this option to show all files in folder window, including files that are normally hidden.
- **Hide files of these types** Click this option to hide the files that are listed in the window in the dialog box. The files in this window are normally files you should not move or delete, so there is not much reason to see them in folder windows

- ⇒ **Display the full MS-DOS path in the title bar** If you click this option, you'll see the drive letter and the names of any folders that the current folder belongs to.
- ⇒ **Hide MS-DOS file extension for the file types that are registered** Click this field if you don't want to see DOS-type filename extensions in file listings.



Note: Any options you set are retained for the next time you open the window. If you choose to browse in a single window (the second option in Figure 8-7), any settings you make are used for each window you open.

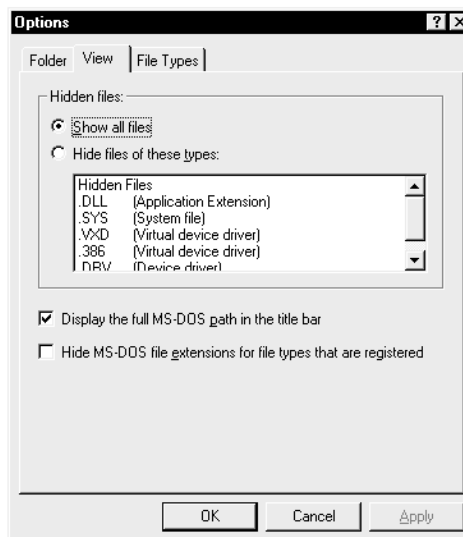
Working with Files

This section describes techniques for working with files. We'll look at ways to create files and we'll look at settings you can make to protect files and ensure that they get backed up the next time you do a system backup.

Quick, Create a New File

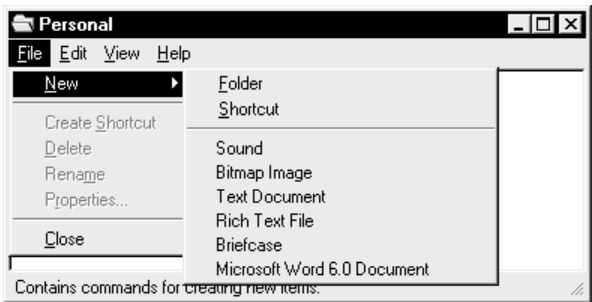
Here's a quick way to create a file without opening an application. With the technique described here, you create empty document objects, then open them and add text, graphics, or whatever else you plan to put in the

Deciding which files should be seen in folder windows
Figure 8-8.



document. You can use this technique when you're first assembling the documents you need for a particular project.

1. Double-click the Personal folder you created in Chapter 6. You should have a shortcut for it on the desktop. If not, open another folder for this exercise.
2. When the window opens, choose New or right-click a blank portion of the window. You'll see a menu similar to the following:



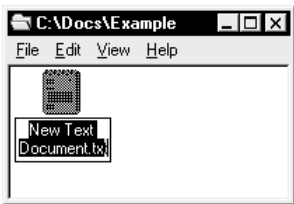
The lower part of the menu lists different types of files you can create. For this example, we'll create a text file.

3. Choose Rich Text File from the menu. The icon shown in Figure 8-9 appears in the window.
4. Rename the new file by typing **Sample.rtf** and pressing ENTER.



Note: By using the .RTF extension in the filename, you create an “association” with the WordPad program, meaning that WordPad automatically starts if you double-click a file with the .RTF extension.

Creating a new file the fast way
Figure 8-9.

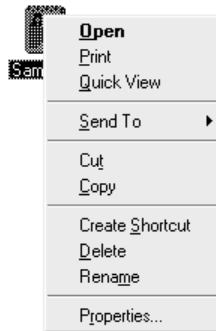


5. Double-click Sample.rtf. WordPad starts and you see the name of the empty file in the WordPad title bar.
6. Type some text, such as **This is a test document**, then choose Save from the File menu.
7. Finally, Click the X button in the upper-right corner of the WordPad window to close the window.

That's how easy it is to create a text document from the Windows 95 desktop. Since you already named the file, you don't need to specify a name when saving the document or closing the window. You could create a series of new and empty files before you start a project, or create one file that serves as a template, type text in it that will be common to other files, then make multiple copies of it. This is discussed in the next chapter in more detail.

Getting Information on a File

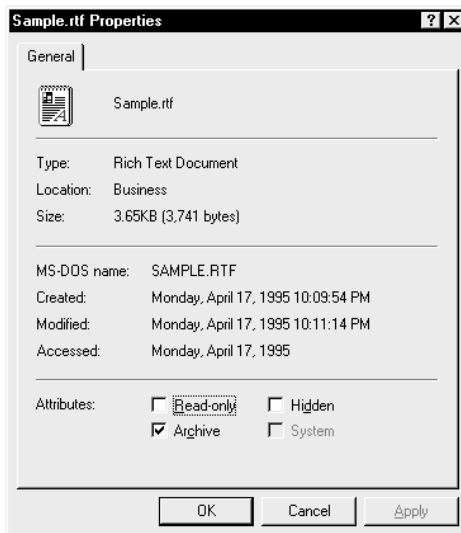
When you right-click a file, the menu shown here pops up. You can choose options on this menu to work with the file or manipulate it.



You've already learned about most of the options on this menu—including Print, Quick View, and Send To—in other chapters. In Chapter 9, you'll learn about the Cut and Copy commands for moving and copying files to new locations.

On this menu, the Properties option is the one we're interested in. Choose Properties from the menu now to display the dialog box shown in Figure 8-10. This is where you can get information about a file, including its size, creation date, and the last time it was accessed. You can also change

The General tab of the Properties dialog box
Figure 8-10.



the attributes of a file. Notice the four option boxes at the bottom of the dialog box:

- ⇒ **Read-only** If you mark this box, the file cannot be changed or deleted until the Read-only field is unmarked. You use this option to protect files from being deleted accidentally or from being changed. If you need to make changes to a file you've marked as Read-only, temporarily disable this option or make a copy of the file and edit the copy.
- ⇒ **Hidden** You can hide files to prevent them from appearing in file listings. However, even if hidden, the files will appear if the "Show all files" option is marked in the Options dialog box pictured in Figure 8-8.
- ⇒ **Archive** When a file is first created, or when it is altered, its Archive flag (A) is set on to indicate that the file should be included in a file backup procedure. Backup utilities look at the Archive flag to determine if a file should be backed up. Once the file is backed up, its Archive flag is set off so the file is not included in the next backup. If the file changes in the meantime, its Archive flag is again set on. In most cases, you won't need to worry about the Archive flag, but there may be times when you want to manually set the flag so you can include a file in a special backup. Simply click the field to include the file in a backup.

- ⇒ **System** Files marked System (S) are DOS files that are hidden in DOS file listings, unless the “Show all files” option is marked in the Options dialog box pictured in Figure 8-8.

Finding Files, Folders, and Applications

The Find utility helps you locate files anywhere in your computer filing system. You can search for files by name, date, content, or other criteria.

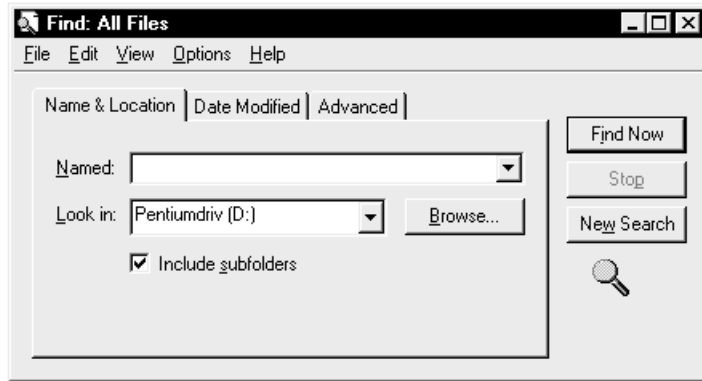
The Find command is located on the Start menu, and a Find option can also be found on folder object menus (when you right-click a folder) and on the Tools menu in the Explorer. Choose Find on the Start menu now. You’ll see the following Find options:

- ⇒ **Files or Folders** Helps you locate files and folders on your own computer’s disk filing system.
- ⇒ **Computer** Helps you find another computer attached to a network. You search for other computers to find disks and resources like printers and modems.
- ⇒ **On The Microsoft Network** This option helps you find files on The Microsoft Network, if you have access to it (see Chapter 19).

Choose Files or Folders to open the dialog box shown in Figure 8-11. The dialog box has three tabs for specifying the criteria for your search (they are described in the section “Defining the Search Criteria” later in this chapter). Once you specify the criteria, you click the Find Now button to begin the search. Search results appear in a list of files in a window at the bottom of the Find window, as shown Figure 8-12.

Working with the Files and Folders You’ve Found

In the lower part of the dialog box in Figure 8-12, the reports discussed in Chapter 7 are listed. Files in the Find window can be manipulated like other files. For example, you can double-click a file to open it for editing, drag and



The Find Files
dialog box
Figure 8-11.

drop it over a printer to print it, or drag it into another folder. Here is what you can do with the files once you've found them:

- ⇒ The default method for listing files in the search results window is Detail view, but you can choose other view options from the View menu. The options are the same as those for folder windows (see “Options for Viewing Folders” earlier in this chapter).
- ⇒ In Detail view, you can click the buttons at the top of each column in the results window to sort the list based on the contents of that column. For example, click the Modified button to sort the files based on the date they were created.
- ⇒ When you select one or more files, a number of options on the File and Edit menu become available, including Rename, Delete, Properties, Cut, and Paste.
- ⇒ You can select multiple files in the search results list. To do so, hold down the CTRL key on the keyboard, then click one or more files in the list. Once they've been selected, you can copy, move, or delete files, as discussed in Chapter 9.

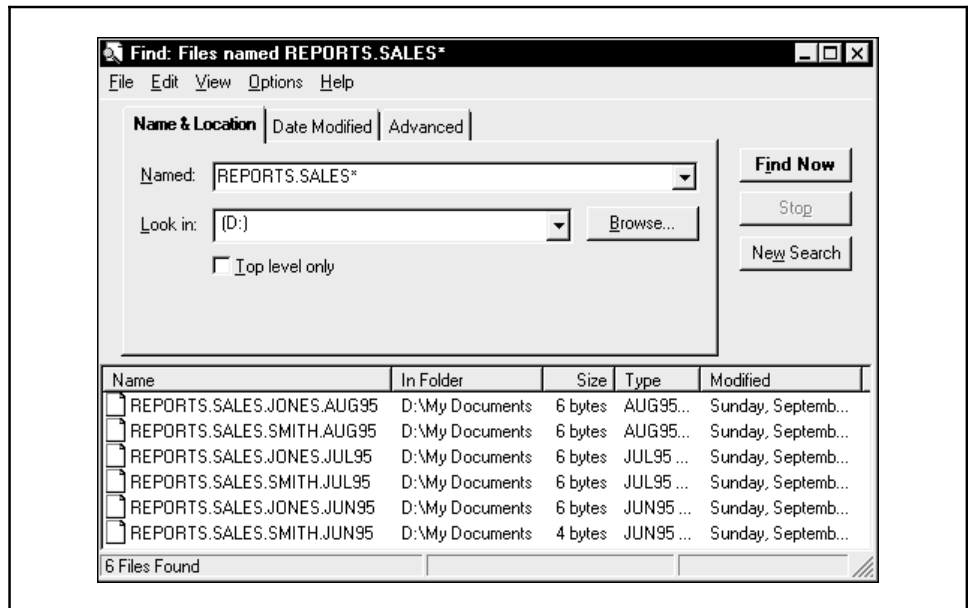
- ⇒ If you locate a file, and you want to look at other files in the folder to which it belongs, choose Open Containing Folder from the File menu.
- ⇒ You can right-click any object in the search results window and choose Properties to change the properties or configuration of the object.
- ⇒ If a search is taking too long and you want to stop it, click the Stop button.
- ⇒ To start over with a new search criteria, click the New Search button.

Defining the Search Criteria

The Find dialog box (see Figures 8-11 and 8-12) has three tabs, each of which displays fields where you can type information about a file or files you want to locate. Each tab page is discussed here.

Name & Location Tab

On the Name & Location tab (see Figure 8-11), you enter an actual name of a file you are looking for in the Named field. If you don't know its full



Results of a search for a file appear in a window at the bottom of the dialog box
Figure 8-12.

name, or you want to search for all files with similar names, you can use wildcard characters (* and ?), as discussed in Chapter 7 (see “Listing Files with Wildcard Characters”). In the Figure 8-13, REPORTS.SALES was typed in the Named field to produce the search results at the bottom of the dialog box.

In the Look In field, you can specify the drive or folder where you want the search to begin. Click the down-arrow to the right of the field to select drives and folders from a list. To specify a specific folder, click the Browse button, then scan through the list to locate the folder.

Date Modified Tab

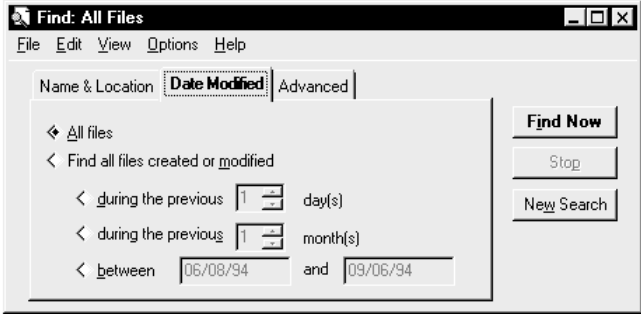
To specify a search criteria based on the dates that files were created or modified, click the Date Modified tab. You’ll see a dialog box similar to the one in Figure 8-13.

To define date criteria, first click “Find all files created or modified.” Next, click one of the lower fields and set the adjoining field appropriately. For example, to search for files created in the last 30 days, type **30** in the “during the previous day(s)” field. You can specify a specific date range in the “between” field.

Advanced Tab

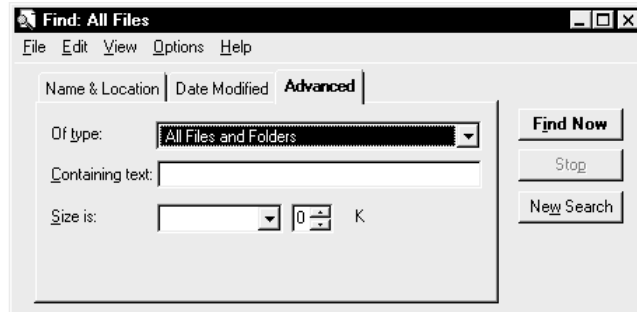
Don’t let the Advanced tab scare you. It really gives you the best control over search criteria. The Advanced fields are pictured in Figure 8-14. You can choose a specific type of file, such as an Excel chart, a Paint bitmap picture, a

Searching for files by the dates they were created or last modified
Figure 8-13.



Searching for a file by defining “advanced” criteria

Figure 8-14.



text file, or even a multimedia file (sound, animation, or video). You can also specify a string of text in a file, or files that fall within a specific size range.

Here is how to fill in the fields on the Advanced tab:

- ⇒ **Of type** Click the down-arrow in the Of type field to view a list of file types. A drop-down list appears. Choose an option to limit the search to a certain file type.
- ⇒ **Containing text** Type a string of text in the field that you want to locate within files. For example, you could type a company name to locate all the letters that were addressed to a company.
- ⇒ **Size is** Specify that you want to list only files that are smaller than or larger than a specified size. Click the down-arrow in the left field to choose either “at least” or “at most,” then specify a size range in the right field.

This chapter shows you how to copy and move files and folders from one place to another when working in desktop folders or when working in Explorer. You'll use click and drag techniques to copy and move files and use menu commands to cut and paste files from one place to another. You'll also learn how to select groups of files and copy, move, or delete them.



Note: Before beginning, you should know the difference between *copying* and *moving* folders and files. Copying makes a duplicate of a folder or file and keeps the original intact. Moving removes a file or folder from its original location and places it in a new location.

Copying and Moving Files

Copying and moving files is inevitable. At some point, you'll need to put a file in another folder or on another disk. Here are a few examples of when you would need to move or copy objects:

- ⇒ When you're reorganizing your system. By default, many programs store documents in the same folder as program files. At some point, you might want to move documents to a separate document folder.
- ⇒ To create a duplicate of a file within the same folder. You would do this, for example, so you could edit one file and keep the other intact.
- ⇒ To copy files to diskettes. You likely will do this on a regular basis to create backup copies of files, to give files to a co-worker, or to take them to another computer.
- ⇒ To copy files from one computer to another. If your company has a network, you might need to do this.



Caution: Copy creates duplicates of files, so if you copy a *folder* to a new location on the same drive when you meant to move it, you'll end up with duplicates of all the files in the folder on the same drive.

There are basically three methods for moving and copying files:

- ⇒ **Drag and drop** You use the mouse to click a file or folder and drag it to a new location. Use drag and drop techniques when you can see both the *source* folder or files you want to move or copy and the *destination* folder, drive, or other object that you want to move the source to. You

might need to minimize some windows and reposition others before you can drag and drop an object.

- ⇒ **Cut, copy, and paste** These techniques involve cutting or copying an object, then pasting it at a new location. Use these techniques if the destination can't be seen or is not accessible for a drag and drop. After you cut or copy an object, you can scan through drives and windows until you locate the destination, then paste the object.
- ⇒ **The Context Menu** Right-click a file and choose Send To on its Context menu to copy it to a disk, printer, fax, or briefcase.

Drag and Drop Techniques

If you've read my book to this point, you've already used drag and drop techniques in previous exercises and you should be familiar with the basic steps. What you may not be familiar with is dragging and dropping in the Windows Explorer. The Explorer provides unique side-by-side views in which you can select source files in the right pane and locate the destination in the left pane. We'll use the Explorer for most of the exercises in this section.

In Chapter 8, you created a new file in the Personal folder called Sample.rtf. We'll experiment with techniques for copying and moving this file. Double-click the Personal folder to open its window now. You can double-click the shortcut object on the desktop or the folder itself in the Drive C window. If you didn't create a Sample.rtf file, use a file of your own in these exercises.

Moving Objects Directly to the Desktop

First, let's drag the Sample.rtf file directly to the desktop. Then I'll explain two interesting and important reasons why you would want to do that.

1. Click the Sample.rtf file (or a file of your own) with the left mouse button (no, don't use the right mouse button as you would normally) and drag it to a blank portion of the desktop.
2. Release the mouse to place the object on the desktop.

Notice that the object is *moved* directly to the desktop, not *copied*. The file or a copy of it is no longer in the Personal folder. *You're not even asked to confirm the operation and you're not shown a menu of different options, like Copy or Create Shortcut(s) Here.* That's because you dragged the object with the left mouse button. Context menus only appear when you click and drag with the right mouse button. There are two important points to remember about drag and drop:

- ⇒ *Move* is the default when you left-click and drag an object to the same disk drive. Note that the desktop is part of the same drive as your Windows files.
- ⇒ *Copy* is the default when you left-click and drag an object to a different disk drive.

If you think about it, this is logical. Windows assumes that if you drag an object to the same drive, you don't want two copies of it on the same drive so it *moves* the object out of its original location. However, if you left-click and drag an object to another drive, Windows assumes you want to keep the original intact, so it automatically copies the object.

If you really want to copy an object to the same drive, click and drag with the right mouse button, then choose Copy from the menu. Another way to copy is to hold the CTRL key, then left-click and drag the object to the destination, but you see no menus when you copy this way.

The Desktop as Holding Tank

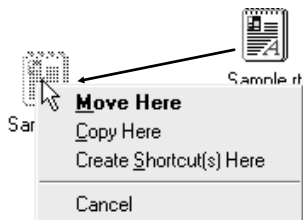
An important detail to notice in the previous exercise is that you placed the object on the desktop, not as a shortcut, but as an actual object. Consider how you might use this trick. The desktop can be thought of as a *holding area*—a temporary place to put things until you figure out what to do with them.

Think about rummaging through your desk. You place interesting stuff you find on the top of the desk, then find a new cubbyhole and place all the rummaged stuff in it. That analogy explains how you can use the Windows 95 desktop to reorganize your filing system or gather files you want to move elsewhere. Just left-click and drag objects you've found to the desktop. Then, when you've created a new folder or added a new drive to put them in, click and drag them to their new "home."

Dragging Files from the Desktop to a Folder

The above exercise demonstrates a useful feature, but we really need that Sample.rtf file in the Personal folder for some other exercises. Let's copy the file we just put on the desktop back into the Personal folder:

1. Right-click Sample.rtf on the desktop and drag it into the Personal folder.
2. Choose Copy Here from the menu that appears:



This technique of dragging files from the desktop into a folder can be useful. For example, suppose that *Sample.rtf* was a *template* file that contained often-used text or a page layout you used often for business letters. Whenever you wanted to create a new letter, you could copy the template from the desktop into a folder where you wanted to create a new letter, then rename and edit it. The desktop is a good place for often-used templates, but if you have a lot of templates, you might want to place them in a separate folder. Templates are discussed in Chapter 10.



Caution: Moving or copying a file is simple enough, but moving or copying a folder is another thing entirely. Be aware that you are moving or copying the entire contents of a folder, including all of its files and folders, to the destination. When working with folders, always right-click and drag to make a menu appear. That way, you can choose exactly what you want to do.

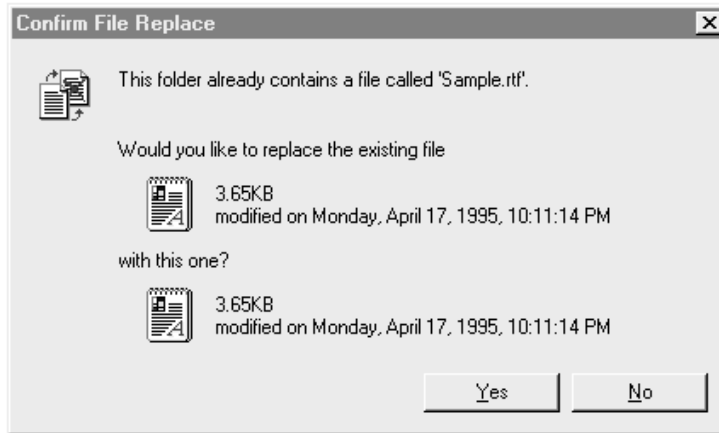
When Two Files Have the Same Name

What happens if you attempt to copy a file into a folder and the folder already has a file with the same name? In that case, you must resolve the conflict. Try copying the *Sample.rtf* file on the desktop into the Personal folder again and you'll see the dialog box in Figure 9-1.

The dialog box asks if you want to replace the existing file with the new one. In this case, the files are exactly the same, so you can click Yes or No. But in some cases you need to carefully evaluate whether the files are the same and whether one is more recent than the other, or whether the files are completely different but share the same name. In the first case, where the files are the same but one is more recent, you might click Yes to overwrite the old file with the new one. In the second case, where the files are different, you would likely click No. Then you would need to resolve differences and combine the files or rename one file so you copy the other into the folder.

When you copy a file into a folder and the folder already has a file with the same name, this dialog box appears

Figure 9-1.



Dragging and Dropping in Windows Explorer

Now it's time to open the Explorer and experiment with its unique dual pane interface. If you don't have Explorer open, click Start, then Programs, and then Windows Explorer. For this exercise, we'll use the Personal folder, the Sample.rtf file, and the Business folder, but you can use folders and files of your own if you wish.

Copying and Moving Files

To copy or move files by dragging and dropping objects in the Explorer, follow the steps below. Drive C and a folder called Personal are referenced here, but if you're referring to this section for assistance, replace the drive and folder name as appropriate.

1. When the Explorer opens, expand the folder tree under the Drive C object (or the drive that holds your Personal folder).
2. Scan the left pane until you find the Personal folder, then click to select it. You see the contents of the folder in the right pane.
3. Copy the Sample.rtf file in the right pane to the Business folder. To accomplish this, you need to make the Business folder visible in the left pane by scrolling the window. When you find the Business folder, don't click it. Doing so would change the view you have of the Personal folder in the right pane. All you have to do is bring the Business folder into view.

4. Right-click the Sample.rtf file in the right pane, then drag it over the Business folder in the left pane and release the mouse. Your Explorer window should look similar to the one in Figure 9-2.
5. Choose Copy Here from the menu to copy the file into the Business folder.

Copying and Moving Folders

You might be wondering how you copy or move folders from one place to another, since all the folders seem to appear only in the left pane. Here's how:

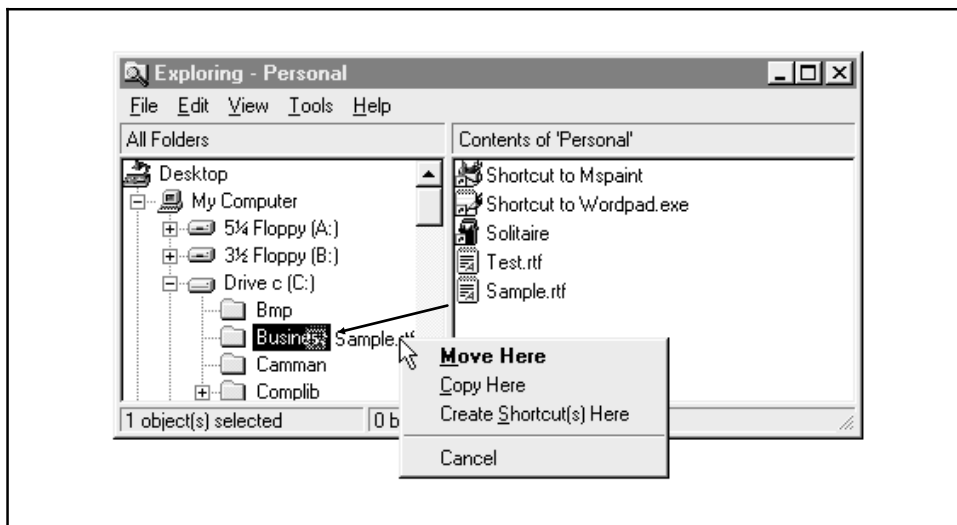
1. Click the drive containing the folder you want to copy or move. If the folder is within another folder, click that folder in the left pane. A list of folders on the drive or within the folder you selected appears in the right pane.
2. Scroll the left pane until the destination drive or folder is visible.
3. Use click and drag techniques to copy or move the folder in the right pane to the destination drive or folder in the left pane.

Cut and Paste Techniques

In the steps above, you used the mouse to click and drag objects from one place to another. However, for this type of operation to work, both the

Dragging and dropping files in the Explorer window

Figure 9-2.



object you want to copy or move and its destination must be visible on the desktop. This is easy in Explorer's dual-pane window, but what if you're working in a folder window on the desktop and the destination is a folder you either don't have open or can't see because it is buried within another folder? To copy or move files in this situation, use the Cut, Copy, and Paste menu options. When you cut or copy a file this way, it is placed in the Clipboard until you choose Paste to put it in its destination.

Here is how to copy and move files with the Cut, Copy, and Paste options:

1. Open the Personal folder (or a folder of your choice) to display its contents.
2. Right-click the Sample.rtf file (or other file you want to copy or move), then choose either Copy to copy the file or Cut to move it.
3. Locate the destination folder you want to copy or move the file to (the Windows folder in our case).
4. Right-click the folder and choose Paste from the menu.

The file is copied to the destination folder. Some users prefer these techniques over click and drag techniques. When you click and drag, you must "set the stage" in advance by making sure you can see the source files and the destination drive or folder. With these techniques, you work one step at a time.



Note: You can also choose Cut, Copy, and Paste from a window's Edit menu, or just press CTRL-X (Cut), CTRL-C (Copy), and CTRL-V (Paste).



Tip: All of these cut, copy, and paste techniques work in the Explorer and you can combine desktop and Explorer techniques. For example, you might cut or copy files in the Explorer, then jump to a folder window on the desktop and paste the files.

Copying, Moving, and Deleting More than One File at a Time

There will be times when you want to copy or move more than one file. If all the files you want to copy are in the same folder, you can simply drag and

drop the folder in a different disk or in another folder. But if you want to copy or move only a few files in a folder, you can select them, then move or copy them as a *group*. The techniques described here show how to form groups of files so you can move, copy, or delete them.

First, Maximize Your View

If you need to select a large group of the same type of files, it helps to group them together so you can see as many of the files as possible in the same window. For example, to select a group of Paint files with the extension .BMP, you could list files in the window by type. That way, all the .BMP files would be together and you could easily select the ones you want to move or copy. Here are techniques that make file selection easier:

- ⇒ Choose List from the View menu to see small icons in columns on the screen.
- ⇒ Choose Arrange Icons from the View menu, then click by Type to group the objects together by file type.
- ⇒ Maximize the window to see as many objects as possible.

Object Selection Techniques

In the following exercises, you learn techniques for selecting multiple files in the Windows folder. We're just experimenting with selection techniques, so we won't do anything with the objects we select. You don't want to delete any files in your Windows directory unless you're absolutely sure you don't need them.

1. Click the Windows folder in the left pane of the Explorer.
2. Choose List from the View menu, then choose Arrange Icons and by Type from the View menu. Maximize the Explorer window as well.

Now you can experiment with selection techniques. Use the following techniques to select objects. We're just experimenting, so click any files in the list you like. After you've tried a selection technique, click any file with the mouse to remove the selection.

- ⇒ To select multiple, noncontiguous objects, hold the CTRL key, then click one or more files with the left mouse button.
- ⇒ To select a range of contiguous files, click the first file, then hold the SHIFT key and click the last file. All the files between are selected.

- ⇒ Another way to select a range of contiguous files is to drag the mouse around the files you want to select. A box surrounds the files as you drag the mouse:



- ⇒ Choose Select All from the Edit menu to select all the files in the window.
- ⇒ Click any file to clear the last selection, then hold the CTRL key and click a few files at random. Choose Invert Selection from the Edit menu. All the files you didn't click are selected.



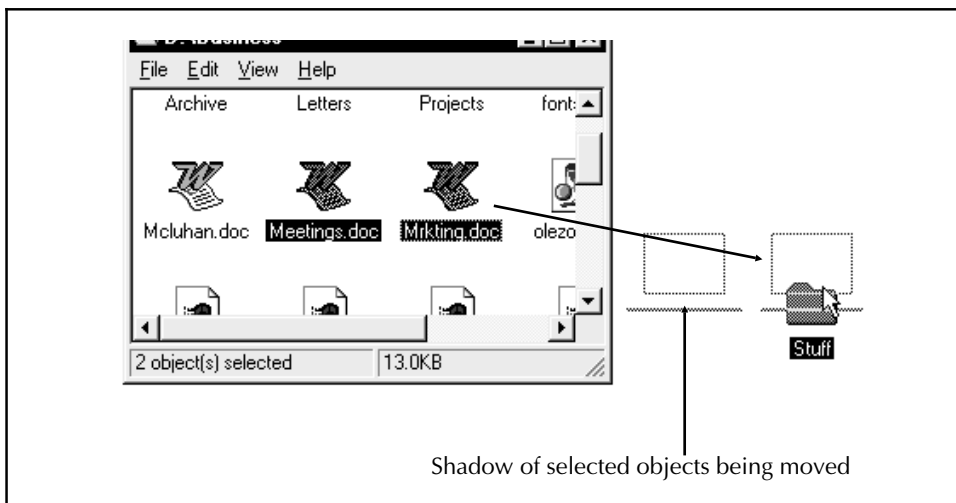
Tip: Another way to locate files you want to copy, move, or delete is to use the Find command, which can produce a list of files from multiple folders that match the search criteria you specify. It is discussed in the next section.

Once you've selected a group of objects, all you have to do is right-click one of the objects and drag. As you drag, a shadow of each object follows the mouse across the screen as shown in Figure 9-3. When you are over the object you want to copy or move the objects in, that object becomes highlighted. Release the mouse button to see a context menu where you can choose either Move Here or Copy Here.



Note: Make sure the correct destination drive or folder is highlighted when you are ready to release the mouse and drop, otherwise you might drop files in the wrong place.

Moving and copying more than one object at once
Figure 9-3.



Using the Find Utility to Assist Copies and Moves

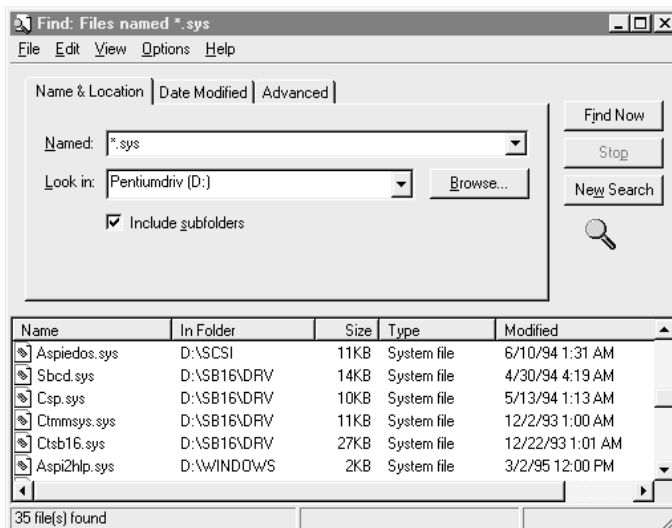
You can use the Find utility to select specific files that are located anywhere on your computer, even if they are located on different drives. After it finds files, you can pick files in the Find window and copy, move, or delete them. Or you can perform some other operation on the files if you want to.

Here is how to use the Find utility:

1. Open it by clicking the Start button and choosing the Find option, then choosing Files or Folder from the cascading menu.
2. For this example, type ***.SYS**. This wildcard and filename extension is sure to find files located in a variety of different folders on any system, since system files are quite common.
3. Click Find Now. Figure 9-4 shows an example of my Find dialog box after the search.

Now you can use any of the selection techniques described in the previous section to select the files in the Find window that you want to copy, move, or even delete. Once you've selected them, you can use click and drag techniques to copy or move the files to other locations. You can also

Using the Find utility to search for files
Figure 9-4.



right-click any object to display a context menu of things you can do. For example, you could click the Send To option on the context menu to send the items to a printer, a disk drive, or the Briefcase.



Tip: The Find command is an excellent tool for “gathering up” files that you’ve stored in many different places. However, the files must have a common name element, date range, file type, or similar text. On the Advanced page, you can look for files of a specific type such as animations, faxes, movies, or even electronic mail, or you can look for a specific block of text in text files, such as a client’s name.

Deleting Files and Folders

Deleting files and folders is a risky business. When you select files in order to delete them, always make sure the selection you make doesn’t include files you want to keep. If you’re deleting folders, make sure the folder doesn’t include a subfolder that might contain important files.

Windows 95 displays warning messages before deleting files, but stay alert. If you need to make space on a disk by removing files, create a backup by copying those files to a floppy disk before you begin deleting.



Tip: You can mark files with the Read-only attribute to prevent them from being accidentally deleted. See “Getting Information on a File” in Chapter 8.

Deleting a File

To delete a file, you right-click it, then choose Delete from the menu. Windows 95 displays a warning box similar to this one:



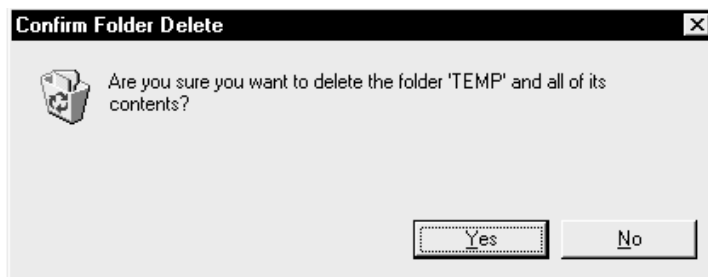
If you’ve selected multiple files for deletion, Windows 95 displays a warning box like the following. Take note, however, that specific filenames are not listed in this box, so you must make sure you’ve selected the files you really want to delete.



Click Yes in the warning box to delete the file or files.

Deleting a Folder

To delete a folder, first close it if it is open as a window, then right-click it and choose Delete from the menu. Windows 95 displays a message similar to the one shown here. Once again, notice that the message does not list the files you are about to delete or tell you that this folder contains another folder.



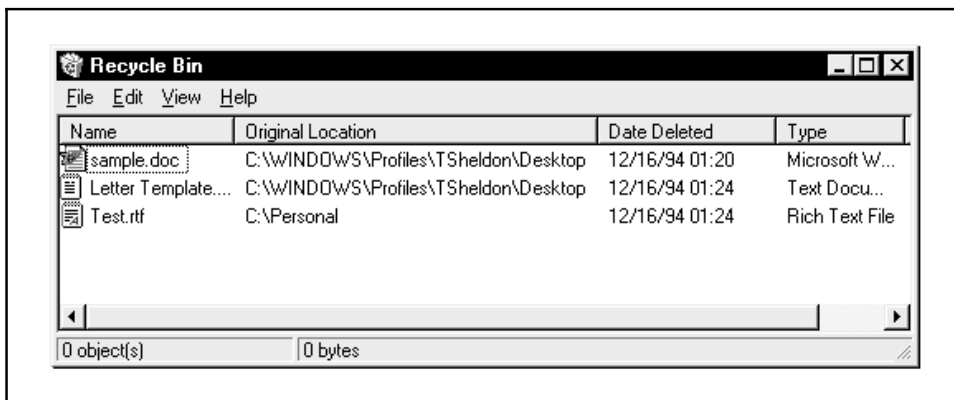
The Recycle Bin for Recovering Deleted Files

Fortunately, the Windows 95 Recycle Bin protects you from accidentally deleting files. The Recycle Bin holds deleted files in a queue, with the most recently deleted file on the top. The oldest file in the queue is permanently deleted when the queue becomes full. As long as the queue is large, there is a good chance you can recover deleted files days or even weeks after they have been deleted. But don't disregard my previous warnings about being careful when you delete files and folders. The Recycle Bin has a limited amount of space, so if you delete a folder that has a lot of files, you may quickly use up the available disk space in the Recycle Bin and not be able to recover some files.

Recovering a File

Double-click the Recycle Bin to open it and view its contents. In Figure 9-5, the Recycle Bin contains only three deleted files (it was recently cleared out to make more room). To recover a file, simply click it, then choose Restore from the File menu. The file is restored to its original location.

Recover
deleted files
in the
Recycle Bin.
Figure 9-5.



Note: You can delete files by dragging them into the Recycle Bin and you can recover files by dragging them out of the Recycle Bin to an appropriate drive and folder.

The Recycle Bin window has a menu bar with many familiar options. You can choose View options to change the way files are listed or rearrange the order of files. You can also click the buttons above each column to sort the file list on that column. (See “Options for Viewing Folders” in Chapter 8 if you need to know more about View options.)

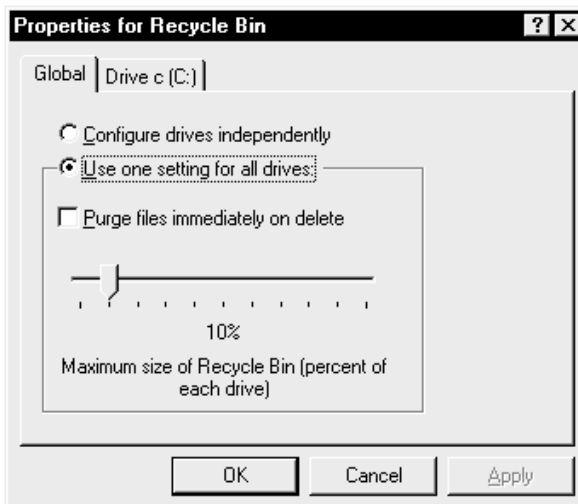


Tip: If part of the text in a column is obscured because the column isn’t wide enough, point the mouse to the left or right side of a column button, and then click and drag to widen the button.

Clearing Out the Recycle Bin

To clear out the Recycle Bin, choose Empty Recycle Bin from the File menu. You can also delete individual files by selecting them and choosing Delete on the File menu. This will permanently delete files without any chance of recovery.

The Properties for Recycle Bin dialog box
Figure 9-6.



Making the Recycle Bin Larger or Smaller

To change the amount of disk space set aside for storing deleted files, close the window, then right-click the Recycle Bin object and choose Properties. A dialog box similar to the one in Figure 9-6 appears.



Note: Each drive requires space for deleted files. You can customize individual drives by clicking the tab for the drive in the Properties for Recycle Bin dialog box, or you can configure default settings for all drives by clicking the Global tab.

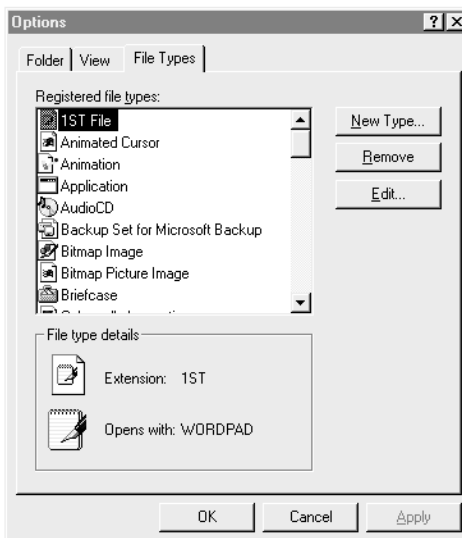
In the Properties for Recycle Bin dialog box, you can adjust the amount of disk space to hold deleted files. The default disk space is ten percent of the disk drive's total size. You can decrease this value if you are running out of disk space, or increase it if you have a lot of disk space and want to make sure you can recover more files:

- ⇒ **The Global tab determines the settings for all drives unless you click “Configure drives independently.” To configure individual drives, click the tab for the drive.**
- ⇒ **Choose “Purge files immediately on delete” if you don’t want to save any deleted files. However, if you choose this option you won’t be able to recover files with the Recycle Bin.**
- ⇒ **Adjust the amount of space dedicated to saving deleted files by sliding the arrow button to the left or right. A recycle bin of the indicated percentage is created on each drive.**

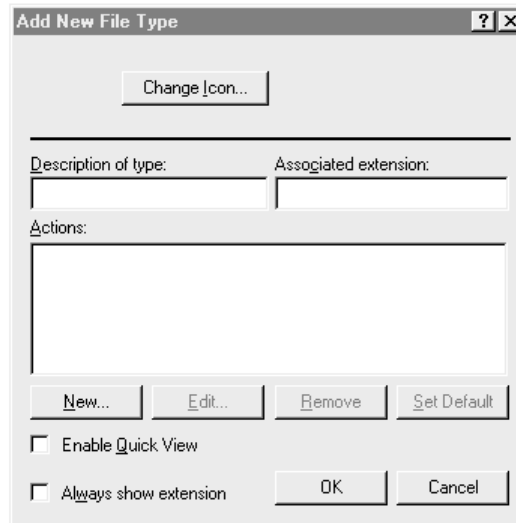
Associating Files and Programs

Most programs automatically add a filename extension to a document when the document is saved. In Windows 95, certain extensions are *associated* with programs, so if you double-click a document with a certain extension, the program in which it was created starts and loads the document in its workspace. For example, the .DOC extension is associated with Microsoft Word and the .RTF extension is associated with WordPad.

Associating a file extension with a program
Figure 9-7.



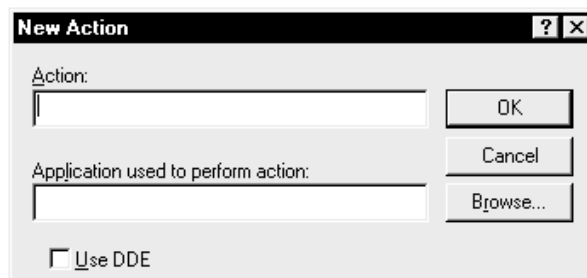
The Add New File Type dialog box
Figure 9-8.



You can create your own associations. For example, if you wrote all your letters with WordPad, you could save files in WordPad with the extension .LET, then associate that extension with WordPad. Then, whenever you double-clicked a document with the .LET extension, WordPad would start and load the document—a letter in this case—in its workspace.

To create associations, begin by opening any folder window, then choosing Options on its View menu. When the Options dialog box appears, click the File Types tab to display the dialog box shown

Finding the application to associate with the file extension
Figure 9-9.



in Figure 9-7. The Registered file types window lists all the current associations. You can click any association, then click the Edit button to change its properties. Click the New Type button to create a new association.

For example, to create an association between WordPad and the .LET extension or a similar association, follow these steps:

- 1. Open a folder window and choose Options from the View menu.**
- 2. Click the New Type button to display the dialog box shown in Figure 9-8.**
- 3. Type a description in the Description of type field, such as WordPad Letter,** then type the new extension in the Associated extension field. In our example, you would type **LET**.
- 4. Click the New button to open the dialog box in Figure 9-9.**
- 5. Type Open in the action field,** then click the Browse button to locate the application associated with the extension. Search for WordPad in the Windows directory and click OK when done.
- 6. When you return to the Add New File Type dialog box (see Figure 9-8), click the two lower check boxes to enable the two features, then click the OK button.**

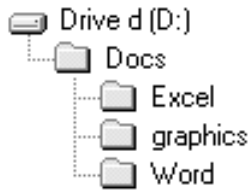
You can now create files with the LET extension that are associated with WordPad. Follow this same procedure to create other associations.



Tip: If you already have files without associated applications, simply double-click the files to open them. You then see a dialog box where you can choose the application you want to use to work with the files. Choosing an application creates an association that is used in the future for similarly named files.

Organizing Files with Folders

You can create folders within other folders to help organize your file system. For example, in this structure, the Docs folders holds three branching subfolders called Excel, graphics, and Word:



In this case, Docs only serves as a folder that holds the other folders. There are advantages to such a structure. Most programs, when you install them, are automatically placed in their own folders. For example, the program files for Microsoft Word for Windows are placed in a folder called WINWORD on a drive that you specify. When you create files in Word for Windows, you can either save them in the WINWORD folder or in a folder you specify. If you created the folder structure pictured above, you would specify the Word folder.

Here are the advantages of creating separate folders:

- ⇒ Creating separate document folders helps keep document files separate from program files.
- ⇒ Backing up files is easier (as described below).
- ⇒ You can create folders for separate projects, then organize your documents by project. When the project is done, you copy the folder to a diskette or tape backup and remove it from your hard disk.



Tip: Always try to keep program files separate from document files to avoid confusion and to simplify the backup procedures for your documents.

Folder Structures to Simplify Backup

If you organize your files into specific folders, you can be more exact about which files you want to include in file backups. For example, while writing this book, I stored the chapter files in a folder called Docs. Every evening, I backed up the Docs folder to another disk. Only the document files were changed daily, so it wasn't necessary to back up the entire system.

A major goal of any backup routine is to minimize the time it takes and the number of disks or tapes required to store the data. If you back up your entire system every day, you may be spending more time than necessary. Consider a strategy in which you back up your entire system on a weekly or monthly basis, but back up changed files on a daily basis. There is little need to back up program files daily because they never change (except for configuration files that hold changes to program settings). In the event of a

system failure, you can restore programs from the monthly backup or from their original diskettes.

Part of this overall backup strategy is to organize data files into a folder structure that is easy to back up. The previous illustration provides a good example. To back up all of your data files, you would simply back up the Docs folder, making sure to specify that all branching folders are backed up as well. Refer to your backup program for more specific information on backing up folders and branching subfolders. Backup techniques are discussed further in Chapter 23.

In Chapter 4, you learned how to create a simple document in WordPad, then save it to disk. This chapter continues the discussion of WordPad. You'll learn about setting up page layouts, formatting text, aligning paragraphs, settings tabs, copying and pasting text, finding text, and other standard features, as well as a few tips and tricks.

Keep in mind that WordPad does not have the advanced features of full-blown word processors like Word for Windows or WordPerfect, but it is useful for writing letters and short notes, and combining information (like pictures, graphs, and numeric data) from several different applications. It takes up less memory than more advanced applications, so if your system is short on memory, you can run WordPad alongside other applications with little slow-down in performance.

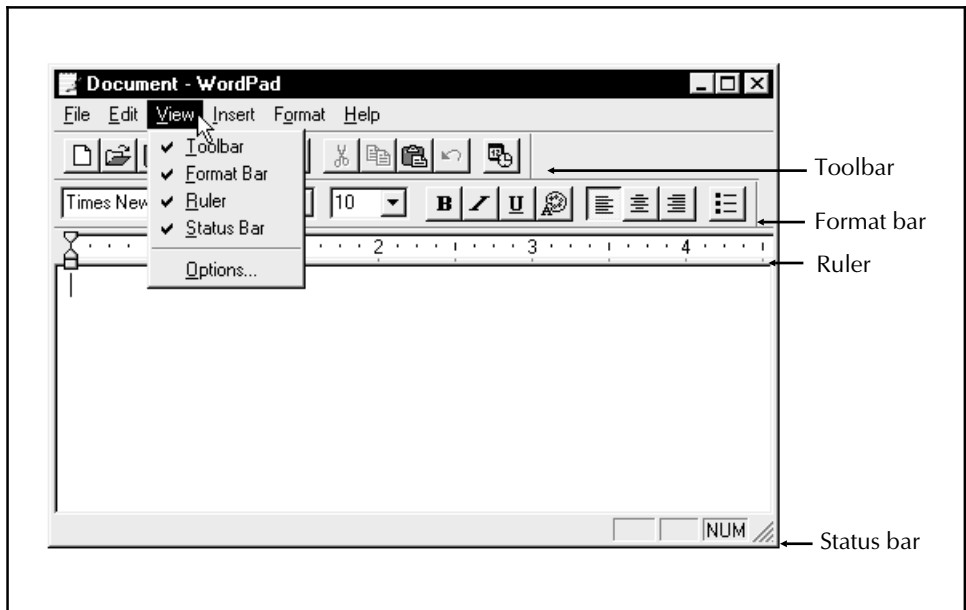
You can start WordPad from the Start menu. If you followed the discussion in Chapter 4 under "Shortcuts for Starting Programs," you can simply double-click the WordPad shortcut object on your desktop. Once WordPad is running, you can do the following:

- ⇒ Specify the initial page layout for a document, such as the paper size and margin settings.
- ⇒ Type, edit, and delete text, as well as copy or move text from one place to another. You can also copy or move text between two different applications.
- ⇒ Change the font, style, and size of characters, and change the alignment and indents of paragraphs. You can also set special tabs and create bulleted or numbered lists.
- ⇒ Search for previously typed text or replace text with new text.
- ⇒ Create compound documents that contain pictures, spreadsheet information, charts, sound, and video created in other Windows 95 applications.

WordPad Screen Options

Before going further, let's set some options for the WordPad window so you can follow the discussion and exercises in this chapter. Some of these features might already be turned on. If so, just leave them on. If you don't like the settings we make here, you can turn them off when you're done with this chapter.

Click View on the WordPad menu bar, then make sure that all four options—Toolbar, Format Bar, Ruler, and Status Bar—are enabled, as shown in Figure 10-1. You'll see a check mark in front of options that are on. If an



The WordPad window

Figure 10-1.

option is not on, click it to turn it on. You use the toolbar, format bar, ruler, and status bar extensively when you work with WordPad.

Click Options on the View menu, then click the General Options tab to display the dialog box shown in Figure 10-2. In the Measurement units panel, choose the unit of measurement you want to work with: Inches, Centimeters, Points, or Picas. The ruler on the WordPad screen will change accordingly. Also make sure that Automatic Word Selection is check-marked. Don't worry about the remaining tabs in this dialog box. The settings in those tabs should remain as the defaults for most users.

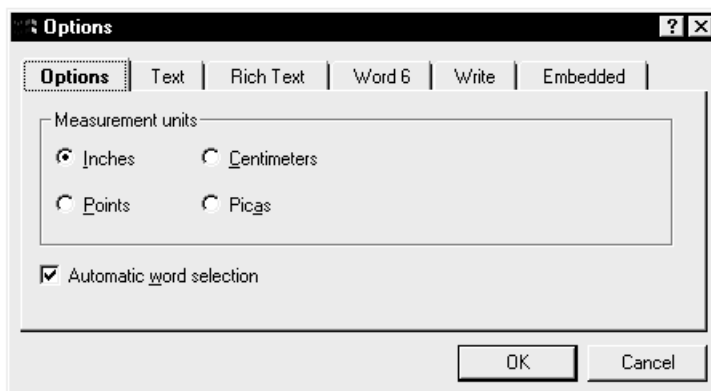
Exploring the Menus

It's easy to learn about a Windows application by exploring its menus. Try opening each WordPad menu now. Figure 10-3 illustrates the File, Edit, Insert, and Format menus (the View menu was covered earlier).

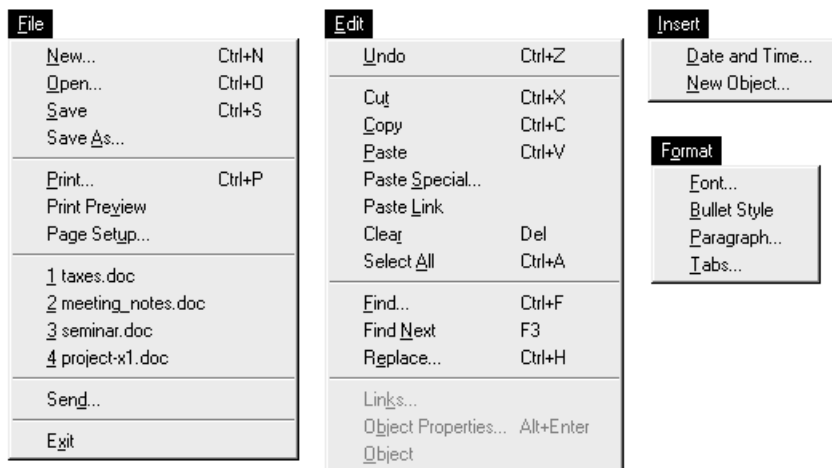
File Menu Options

A short description of each File menu option is provided below. Except for the Page Setup option, File menu options are not covered further in this

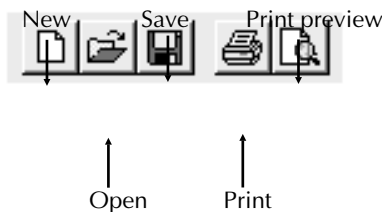
Setting
WordPad
options
Figure 10-2.



The WordPad
menus (except
View)
Figure 10-3.



chapter. Refer to Chapter 4 for instructions on loading, saving, and printing documents. Toolbar button equivalents for the File menu options are shown here:



File New Choose New if you have a previous document open and you want to open a new workspace. You'll be asked to save an open document, then you can start working on your new document.

File Open Use the Open option to load a previously created file in WordPad's workspace.



Tip: A list of previously opened documents appears at the bottom of the File menu. The documents are numbered. To open one, click its name or type the number preceding it.

Save and Save As Use the Save option to save the changes you've made to a document. If the document doesn't already have a name, the Save As dialog box appears so you can name it. Use the Save As option to save a document under a new name. For example, you can load an existing file, make changes to it, and choose Save As to save the changed file under a new name. That way you have two copies. The original copy keeps the old name and stays on disk in case you need to go back to it, and the new copy becomes a file in its own right with a new name.

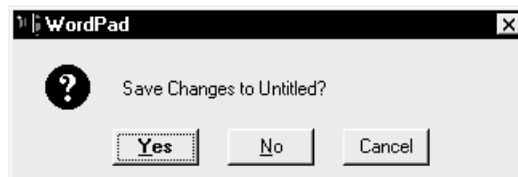


Note: The Save dialog box has a field called Save as Type for saving WordPad documents in Word for Windows format, Rich Text Format (RTF), or as text only. The RTF format retains formatting information, such as fonts and margins. Always save formatted files in RTF format unless you plan to use the document in Word for Windows.

Print and Print Preview Choose Print to print the current document and choose Print Preview to see what the document will look like when it is printed.

Send Send appears on the File menu if your system has a modem or is connected to a network. Choose Send to transmit the current document as e-mail to another user. When you choose Send, the Microsoft Exchange utility starts so you can address the e-mail and attach the file to it. Refer to Chapter 15 for more information about electronic mail.

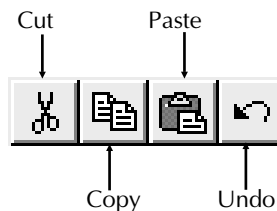
Exit Choose the Exit option to exit the application. If you made changes to the current document and forgot to save them, the application displays a message box similar to the following. Choose Yes to save the changes, No to exit without saving, or Cancel to return to the application for further editing.



You might see this dialog box when shutting down Windows 95. When a lot of windows are open, you may forget that an application is running when you try to shut down your system. Click Cancel in this case so you can return to the application and see what it is you might need to save.

Edit Menu Options

The edit menu has options for working with the text of your document. The Edit menu commands are also available from the following toolbar buttons:



Undo Click this option to undo your *last* action, such as a deletion or a formatting change. You can also press CTRL-Z to undo an action. Keep in mind that this command allows you to undo only the *last* change you made.

By the way, if you choose Undo twice in a row, the first undo command is undone by the second undo.

Cut, Copy, Paste These are Clipboard options you use to copy or move text, graphics, or other information from one place to another in the same document, or from one application window to another. You can also press the following keys: CTRL-X to cut, CTRL-C to copy, and CTRL-V to paste.

Find, Find Next, Replace Use these options to locate text in a document, or to locate and replace text.

Paste Special, Paste Link, Links, Object Properties, Object You can insert information in WordPad documents from other applications and maintain a link between the information inserted in WordPad and the application that created it. When the information gets changed in its original location, it also changes in the WordPad document. This is called *object linking and embedding* (OLE). The Links, Object Properties, and Object menu options are associated with OLE and are discussed in the section “Creating Compound Documents in WordPad.”

Insert Menu Options

Use the Insert menu options to insert information in a document. You must first position the blinking insertion point at the place where you want to insert the information.

Date and Time Inserts the current date and time in your document at the location of the blinking cursor.

New Object Inserts an embedded or linked object in your document at the location of the blinking cursor.

Format Menu Options

The Format menu holds options for changing the look of text and the alignment of paragraphs. The Font, Paragraph, and Tabs options open dialog boxes, but you can change many formatting options by simply clicking buttons on the toolbar.

Font Choose this option to open a dialog box where you can select different font types, sizes, and styles.

Bullet Style Choose this option to place a bullet at the start of a selected paragraph. The paragraph is indented to make room for the bullet.

Paragraph Choose this option to open a dialog box where you can change how far the paragraph is indented from the left and right margins. You can also set an indentation from the first line of the paragraph and align paragraphs along the left or right margin.

Tabs Choose this option to open a dialog box where you can specify custom tab stops.

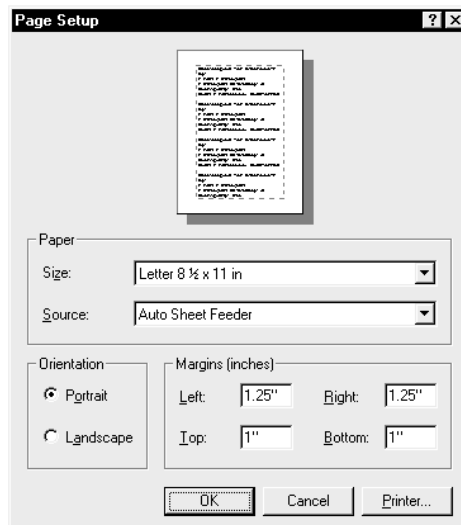
Working with Documents

This section describes how to lay out a new document, edit a document, navigate through a document, align paragraphs, set indents and tabs, create templates, format documents, and copy, move, and delete text.

Setting Up a New Document

Before you begin typing text in a document, it's a good idea to specify the paper size, margins, and other layout features. To do this, start by choosing Page Setup on the File menu to display the dialog box shown in Figure 10-4.

Decide how your document will look in the Page Setup dialog box
Figure 10-4.



At the top of the Page Setup dialog box is an example page. As you make changes to the page size and to margins, the example page changes its appearance. Here are the basic steps to defining a page layout:

1. Click the down-arrow button in the Size field and choose an appropriate paper size. Notice that you can choose envelopes, but you may need to choose Landscape in the Orientation field to print text on envelopes, depending on the type of printer you have.
2. In the Source field, choose a printer tray that holds the paper you want to print on. If your printer has more than one tray, you could have letterhead stationery in one tray and blank second sheets or envelopes in the other. Notice that you can also choose manual feed if you want to insert a special kind of paper or print on the back side of a page.
3. Choose Portrait or Landscape, depending on whether you want to print down the sheet or across it. Try clicking each button if you're not sure what this means—you'll see an example of a landscape and a portrait page on the example page at the top of the dialog box.
4. In the Margins fields, type a new value for the left, right, top, and bottom margins. The unit of measurement you use for page layouts is determined by the Measurement Units field in the Options dialog box (which you saw in Figure 10-2).
5. Click the Printer button to select a different printer.

Once you're done laying out your document, click the OK button. Now you can start editing by using the features discussed in the following sections.



Note: "Editing 101" in Chapter 4 provides a basic overview of editing documents in WordPad.

Navigating a Document

In a large document, you can move around by using the scroll bars, the PAGE UP and PAGE DOWN keys, and various other methods, as described below:

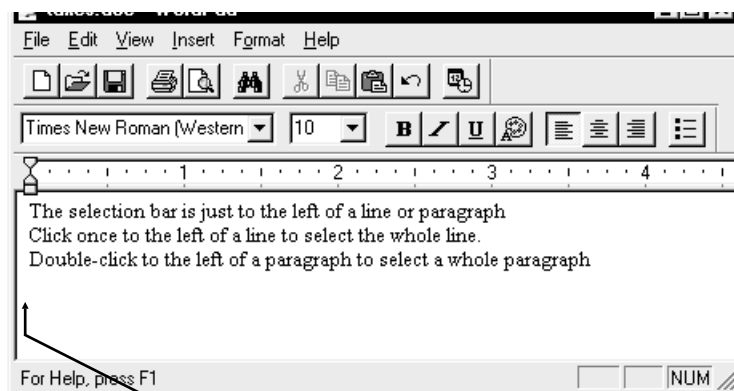
- ➡ **To jump left or right one word** Hold CTRL and press the LEFT ARROW or RIGHT ARROW key.
- ➡ **To jump to the next or previous paragraph** Hold CTRL and press the UP ARROW or DOWN ARROW key.

- ⇒ **Move up or down one window** Press the PAGE UP or PAGE DOWN key.
- ⇒ **Move to the first or last line of a window** Hold CTRL and press the PAGE UP or PAGE DOWN key.
- ⇒ **Move to the first or last character in a line** Press the HOME or END key, respectively.
- ⇒ **Move to the beginning or end of a document** Press the CTRL-HOME or CTRL-END key, respectively.

Copying, Moving, and Deleting Text

To copy, move, or delete a block or text, pictures, or other information, you must first select, or highlight, what you want to move.

- ⇒ To highlight a set of characters or words, left-click at the start of the text, then hold the mouse button and drag through the text.
- ⇒ To select a word, double-click it.
- ⇒ To select a line, click in the Selection bar just to the left of the line, as show here:



Selection bar

- ⇒ To select a paragraph, double-click in the Selection bar just to the left of the paragraph.

Once you've selected the text, you can copy, move, or delete it by using the following techniques. Try these techniques in the Sample document or a

new document that you create. (Remember, to undo a change you just made, choose Undo on the Edit menu or press CTRL-Z.)

- ⇒ **Copying** To copy text (and leave the highlighted text intact), choose Copy from the Edit menu or press CTRL-C on the keyboard. The text is placed on the Clipboard. Move the insertion point to the location in your document where you want to place the text and either choose Paste from the Edit menu or press CTRL-V.
- ⇒ **Moving** To move text (and remove the highlighted text from its current position), choose Cut from the edit menu or press CTRL-X. Move the insertion point to the location in your document where you want the text to be placed and either choose Paste from the Edit menu or press CTRL-V.
- ⇒ **Removing** Press the DEL key on the keyboard to remove the highlighted text (or choose Cut from the Edit menu).

Cut and Paste Tricks

A useful way to put cut and paste to work in WordPad documents is to create *boilerplates*, which are blocks of text you can use over and over again in many documents. For example, your name and address could be made into a boilerplate and inserted at the start of all the letters you write. You can also save formats and alignments in boilerplates. Save boilerplates for future use with one of the following techniques:

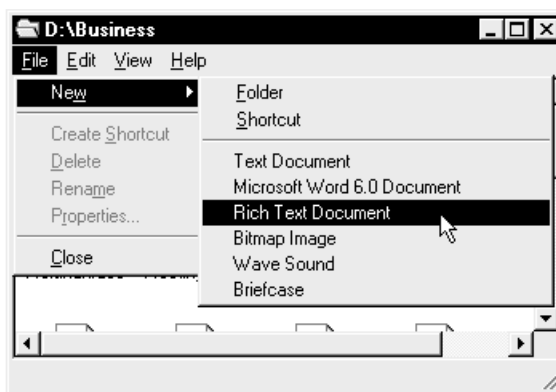
- ⇒ Create a document like a form letter (we'll call it a *template*) that you use often. Change the page layout and set the character fonts and paragraph formats to suit the form letter. Then save it with a name like FORM1. When you need to create a similar form letter, just load FORM1 and make changes to it. When you finish with the changes, save the file under a different name to protect the original FORM1 file from being erased. See the next section, "Creating Templates," for details.
- ⇒ Create a document to hold miscellaneous blocks of text, graphics, or other information you use on a regular basis. Consider this document a "stash" for reusable, pre-written blocks of information. Give it the name STASH if you like. It might contain often-used legal text, paragraphs for contracts, tables, addresses, and other information. When you need to use any pre-written text from this document, simply start a second copy of WordPad on your desktop, open the document, and use copy and paste techniques to move blocks from one WordPad window to another.

Creating Templates

A *template* is a document that contains text and page layouts that are used often. Once you create a template, you can open it and use it to create new documents. However, it's important to save changed templates under a different filename so you can reuse the original template in the future. To prevent yourself or others from accidentally changing a template, you can flag it as *read-only*. A read-only document can be opened but not changed. These techniques are covered here.

In the following example, you'll create a template in your Business folder for a standard form letter. If you didn't create the Business folder, refer to "Creating a Personal and Business Folder on the Desktop" in Chapter 6, or just create the file in one of your own folders.

1. Double-click the Business folder shortcut on your desktop or open a new folder, choose New from the File menu, and click Rich Text Document, as shown here:



2. When the new object appears in the window, type **Letter Template.rtf** as its name and press ENTER. The .RTF extension ensures that the document loads into WordPad, which is associated with the .RTF extension (see "Associating Files and Programs" in Chapter 9 for a discussion of filename associations.)
3. Double-click the object to open WordPad. (If you left off the extension, a window appears asking which application you want to use to edit the document. Choose WordPad from the list.)

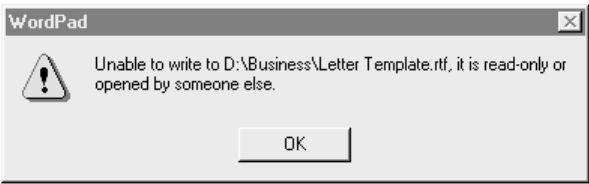
Now change the page layout, type text that is common to all the letters you'll create with this template, and do any other text or paragraph formatting that is required. You can type your name and address, a

salutation, or other standard form letter elements. When you're done editing, choose Save from the File menu and click the X button to close the window.

Now you need to flag the document as read-only so that WordPad will force you to save it under a different name if you make changes to it. Follow these steps to apply the Read-only flag:

1. Right-click the document in the Business folder window, then choose the Properties option on the menu that appears. The dialog box shown in Figure 10-5 opens.
2. Click the Read-only box in the Attributes field, then click OK.

If you edit the document and try to save it without using the Save As command, you'll see the following message box:



You can create a template anywhere, even on the desktop, which makes it easy to get to the documents you use most often. You can copy templates as

Make a document read-only by checking the Read only option in the Attributes field

Figure 10-5.



well. To make a copy of a template on your desktop, simply click it with the right mouse button, drag it to another location, and choose Copy Here. You can then make changes and rename the template.



Note: To change a template that has been marked read-only, right-click the template, then choose the Properties option and disable the read-only attribute until you're done making changes.

Formatting Documents

Formatting entails changing the alignment of paragraphs, setting tabs for indents and tables, creating numbered and bulleted lists, or changing the font, style, and size of text. We'll be working with the Sample document mentioned earlier (the one you initially created in Chapter 4), so make sure it's open now. Alternatively, you can follow the discussion below as you write a letter to a friend or business associate.



Tip: If you're creating a new template, keep in mind that you can apply formats to any block of text in the template. That way, you don't need to apply formats every time you create a new document from the template.

Working with Fonts

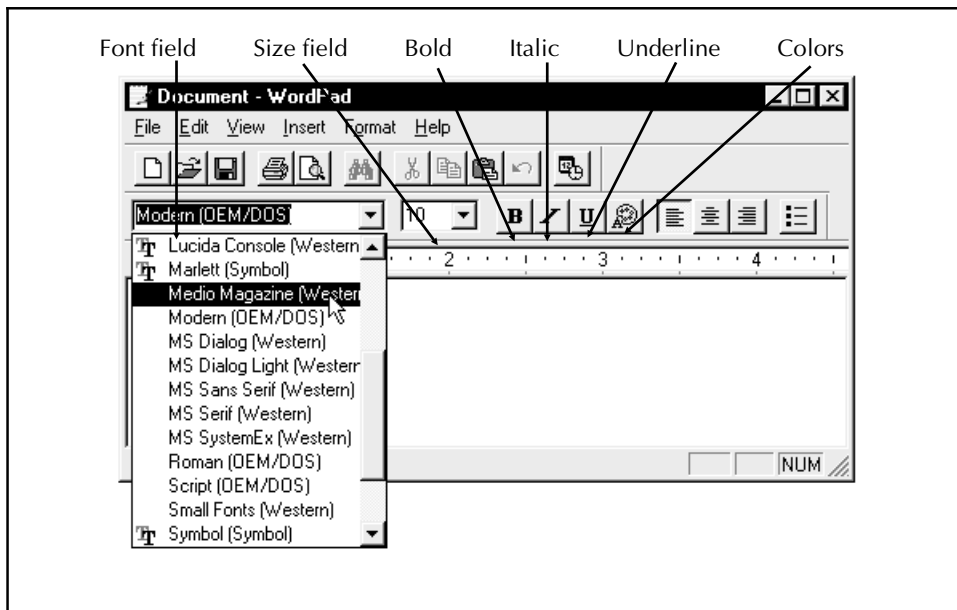
A *font* is a collection of letters, numbers, and punctuation marks with a consistent design belonging to one typeface. The names of fonts appear in the font field on the left side of the format bar. You can click the down-arrow button in the font field to see a list of fonts, as shown in Figure 10-6. The other font formatting fields are listed in the figures.



Note: When you press ENTER at the end of a paragraph to start the next paragraph, the next paragraph will have the same font formats as the previous one.

You can also change the size and style of a font. Styles include bold, italic, underline, and a few others, as you'll see later. You can change fonts by choosing options on the format bar, or you can open the Font dialog box to see and apply more options than are available on the Format menu (the Font dialog box is described later).

Font
formatting
features in
WordPad
Figure 10-6.



There are two ways to apply font formatting when working with your documents:

- ⇒ Highlight text you've already typed, then change its font, size, and style by using the techniques described below.
- ⇒ Change the font, size, and style "on the fly" as you type.

Try the following steps to format text in the Sample document or any new document you are creating:

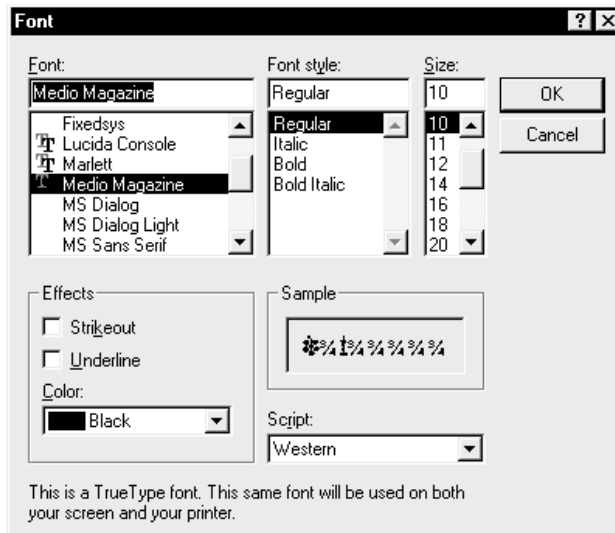
1. Highlight a block of text in your document.
2. Click the down-arrow button in the font field to display the font drop-down list.
3. Click a font name such as Arial. You might need to scroll through the list to find this font. For fun, choose Symbol or Wingdings.
4. After selecting a font, click the down-arrow button in the size field and select a larger font size.
5. Click one of the style buttons, such as Bold or Italics. You can apply both styles if you like.

Another way to apply bold, italic, or underline styles is to press CTRL-B, CTRL-I, or CTRL-U, respectively, after highlighting text or before typing new text. To turn a style off when you're typing in text, click the style button again or press the style key combination again.

The Color button lets you change the color of text. There are several reasons why you might want to give a highlighted block of text a new color. First, if you have a color printer, color fonts may print in the color you selected, depending on the printer. Second, you might need to flag text that has been changed or added so that another person, such as an editor, can see the changes you've made. Finally, you can use colors to highlight special sections in a document so that readers can find them easily on the screen. If you're sending e-mail to other users or posting messages on electronic bulletin boards that support color, such as The Microsoft Network (see Chapter 19), color provides a good way to emphasize what you are saying.

Using the Font Dialog Box to Format Text

Another way to format text is to open the Font dialog box, which is shown in Figure 10-7. The following exercises demonstrate how to access this dialog box.



Changing fonts with the Font dialog box

Figure 10-7.

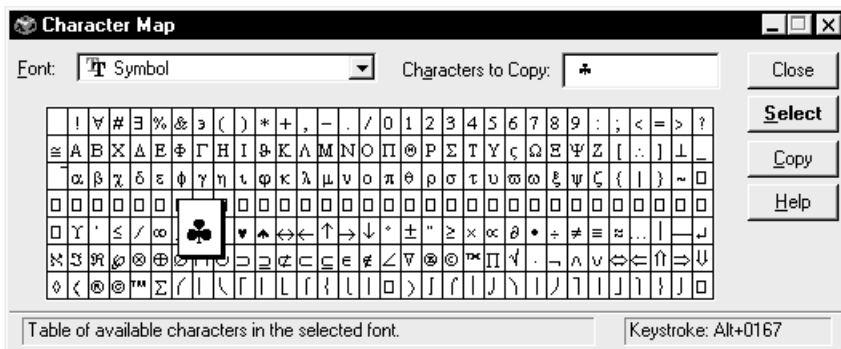


Note: You can use the Font dialog box instead of the format bar to format text. In the dialog box, all the formatting options can be found in one place.

1. Before opening the dialog box, highlight text in the WordPad document you've been working with, or click on the location where you want to start typing text that will have the new font.
2. Click Format on the main menu, then choose Font to open the Font dialog box. This dialog box is typical of the font formatting dialog boxes in Windows 95 applications. There are three main fields in the Fonts dialog box: Font, Font Style, and Size. The Sample field displays a sample of the font, style, and size you choose. You can use the font catalog you created in Chapter 6 as a guide for choosing fonts (see "Finding Out Which Fonts You Can Use" in Chapter 6).
3. In the Font field, use the scroll bar to scan through the list of fonts, then click the font you want to use.
4. In the Font Style field, choose a style.
5. In the Size field, choose a font size. As you make changes to the font, the text in the Sample window changes. Notice the Effects field for creating strikeout and underlined text, and the Color field for giving text a color.
6. Click the OK button to format the text you highlighted or the text you are about to type in.

The Character Map for Inserting Special Characters

Sometimes you want to insert nonstandard characters in documents, such as mathematical symbols and alphabetic characters from foreign languages. Your computer can display and print nonstandard characters even though most of them are not on the computer keyboard. The Character Map is your tool for inserting special characters in documents. It displays an extended character set for each font on your system. The Character Map makes it easy to get special characters into documents. To open the Character Map, click the Start button, highlight Programs, then Accessories, and click on Character Map. You see a dialog box similar to the following:



Notice the large selection of special symbols, foreign language characters, accented characters, arrows, and the like. You can point to any character and click to see it enlarged, as shown by the club in the picture. Here's how you use the Character Map:

1. In the Font field, click the down-arrow, then choose a font you want to use. Take special note of the Symbol set and Wingdings set for future reference.
2. After selecting a font, double-click the character you want to insert in your document (you can also click a character, then click the Select button). The character then appears in the Characters to Copy field.
3. After you've selected all the characters, click the Copy button. This places the characters on the Clipboard.
4. Switch back to WordPad, position the cursor where you want to insert the characters, and press CTRL-V (or choose Paste from the Edit menu).



Tip: You can double-click more than one character. For example, you can build a mathematical formula by selecting a number of appropriate characters from the MT Extra character set.

Once you paste the characters into your document, you might want to change their font size. Highlight the characters by dragging through them with the mouse, then resize the font. In WordPad and most other applications, you can select a different font from the format bar or choose Font from the Format menu.

Aligning Paragraphs

You can align each paragraph in a WordPad document individually. Just click anywhere in the paragraph, then click one of the alignment buttons in the toolbar, as shown here:



Note: When you press ENTER at the end of a paragraph to start a new paragraph, the new paragraph is given the same formats as the previous one.

Try the following exercises to see how paragraph alignments work:

1. Type the following paragraphs, making sure to press ENTER at the end of each line. Pressing ENTER creates a new paragraph. You'll align the paragraphs after you've entered the text.
 - This paragraph is flush right
 - This paragraph is centered
 - This paragraph is flush left
 - This is bulleted paragraph number 1
 - This is bulleted paragraph number 2
2. Click anywhere in the first paragraph, then click the Flush Right button on the toolbar.
3. Click anywhere in the next line, and then click the Center button on the toolbar.
4. The third line should already be flush left, but if not, click it, then click the Flush Left button on the toolbar.
5. Drag the cursor through the last two lines to highlight both at the same time, then click the Bullet button on the toolbar.

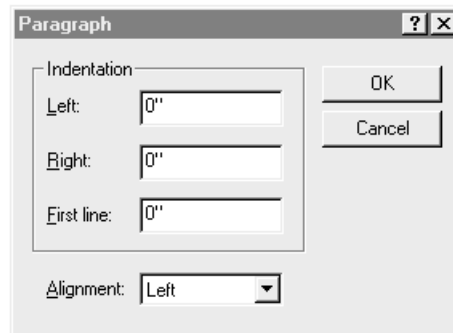
By now, your document should look similar to Figure 10-8. If not, don't worry too much about details for now. This is only a sample document. You can try the exercise again if you don't think you got it right.



Tip: At this point, it's a good idea to save your document again. Choose Save from the File menu. If you're creating a new file, WordPad asks you to name the file.

Indenting Paragraphs

You can indent a paragraph any way you want to. For example, screenwriters and playwrights need to indent paragraphs both from the left and the right margins for scene descriptions and dialogue. You can indent paragraphs by adjusting the stops on the ruler, as discussed in the next section, or by opening the Paragraph dialog box shown here:

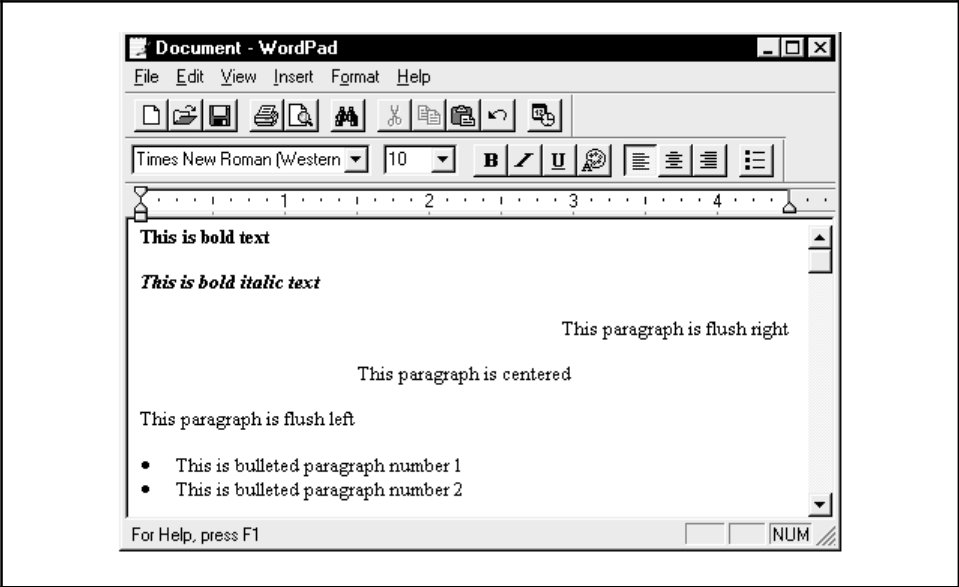


To adjust indents for any paragraph, first select the paragraph by left-clicking anywhere in it, and then choose Paragraph from the Format menu to open the Paragraph dialog box. Type a value in the Left, Right, or First line boxes. You can also choose Left, Right, or Centered from the Alignment drop-down list box, if necessary.



Tip: You can adjust the first line indent either in or out from the left indent. For example, to create numbered and bulleted lists, the paragraph is indented and the first line is "outdented." To outdent a line, type a negative value in the First line field of the Paragraph dialog box. This is discussed under "Creating Numbered Lists" later in this chapter.

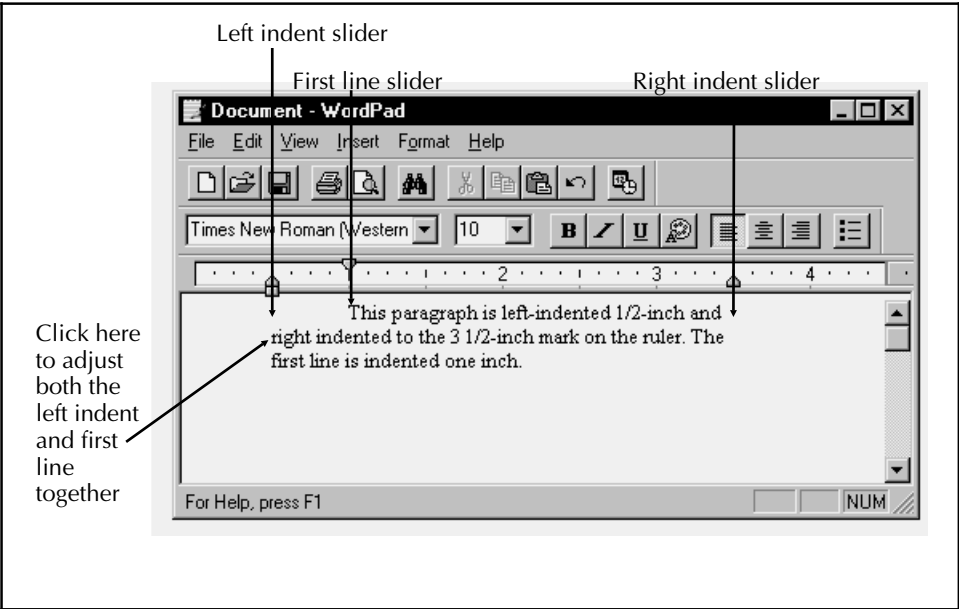
Paragraph alignment example
Figure 10-8.



Using the Ruler to Change Indents

While you can use the Paragraph dialog box to indent paragraphs by exact measurements, the ruler provides the easiest method for indenting text. After selecting a paragraph, simply slide the arrow buttons, shown in Figure 10-9, on the ruler to the left or right to adjust indents.

Indenting text with the ruler
Figure 10-9.

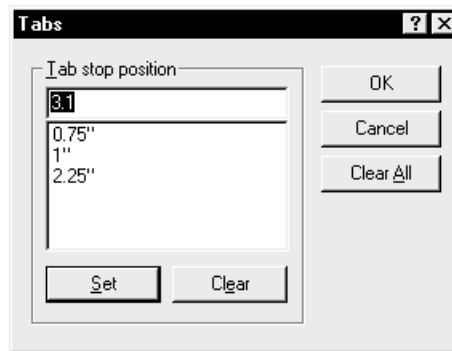




Note: The left indent slider has two buttons. If you click the lower button and drag, the first line slider moves with it. If you click the top button, the left indent slider moves independently of the first line slider.

Setting Tabs in a Document

You can set tab stops in a document by simply clicking the ruler with the left mouse button at the position where you want to set a tab, or by opening the Tabs dialog box, as shown here, and typing the exact location on the ruler where you want to place tabs:



If you use the ruler method, a Tab marker similar to the following appears on the ruler. You can adjust the marker by sliding it to the left or right. To remove a tab stop, simply drag it up or down off of the ruler.



Note: WordPad automatically sets tab stops every 1/2 inch in new documents. When you put a custom tab of your own on the ruler, all the preset tabs to the left of it are removed from the ruler, but the preset tabs to the right of the custom tab remain.

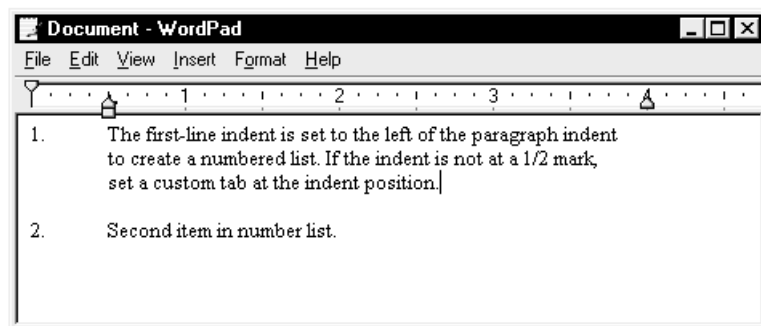
To set tabs on the Tabs dialog box, type a ruler value in the top field, then click the Set button. This adds the value to the lower list, which holds all the current tab settings. Click Clear if you want to remove all the custom tabs.

Creating Numbered Lists

Here are the steps for creating a number list. In this exercise, we'll make all the adjustments on the ruler and then open the Format Paragraph dialog box to see what the values look like so you can set them numerically in the future if you like.

1. Create a new paragraph by pressing ENTER at the location where you want to insert the numbered list.
2. Move the left indent slider to the 1/2-inch position.
3. Move the first line slider to the 0 position. This creates a 1/2-inch "outdent."
4. Click with the left mouse button at the 1/2-inch position on the ruler to create a custom tab. (If a custom tab is already at the 1/2-inch position, you can skip this step.)
5. Now type **1** and press the TAB key, then type the text for the first numbered item in the list.

When text wraps to the second line, it indents to the 1/2-inch position, as shown here:



When you create your own numbered list, you can set the indents, outdents, and tabs to any location appropriate for your layout.

Now open the Paragraph dialog box to view the values for the numbered list. First make sure the numbered list is selected, then choose Paragraph on the Format menu. Note the negative value in the First line field.

Finding and Replacing Information in Documents

You can use the Find command on the Edit menu to locate text in a document, and the Replace command to find and automatically replace text. In the following exercises, you'll see how to find and replace text in the Sample document. (If you don't have the Sample document, use a document of your own for these exercises.)

1. Choose Find from the Edit menu to display the dialog box shown here:



2. Drag the dialog box to another position so it doesn't obscure your WordPad document.
3. Type the text you want to find in the Find What field, then click the Find Next button to locate the text in your document. If you're working with the Sample document, type **paragraph** in the field.

You typed this word several times in a previous exercise, so each instance of the word "paragraph" is highlighted when you click Find Next. In normal use, you would locate some text using Find, click inside the document and edit the text if necessary (use Replace to automatically replace text), then click Find Next again to jump to the next occurrence of the text. After you close the Find dialog box, you can press F3 to reopen it and repeat the last search.

Note the following options on the Find dialog box.

- ➡ **Match whole word only** Click this option to find only the word you typed in the Find What box. For example, if you type in "her," Find will highlight just that word. It won't highlight "there," "Hereford," "thrasher," "hermaphrodite," or other words that contain the letters "her".

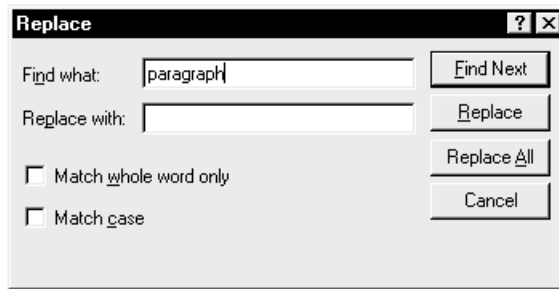
- ⇒ **Match case** Click this option to locate text that matches the capitalization of the text you typed in the Find what box. For example, if you type “Windows” and select the Match Case option, Find won’t highlight the word “windows.”



Tip: To quickly return to a location in your document, insert a string of characters like &&&. Later, when you want to return to that location, simply use Find to locate &&&.

Finding and Replacing Text

Now choose Replace on the Edit menu to open the following dialog box:



Notice that the text you typed in the previous find operation—the word “paragraph”—is in the Find what field. For this exercise, you’ll replace every instance of “paragraph” in your document with the word “line,” but if you’re working with another document, type the text you want to find and the replacement text in the appropriate fields.

1. Choose Replace on the Edit menu if the Replace dialog box is not already open.
2. Type **line** in the Replace with field (and type **paragraph** in the Find what field if that word is not already there).
3. Click the Find Next button. The first occurrence of the word “paragraph” is highlighted in the text.
4. Click Replace to replace the word “paragraph” with the word “line.”
5. Click Find Next to locate the next occurrence of “paragraph,” or simply click Replace All to replace all occurrences in the document.

At this point, you can click any of the following buttons in the Replace box:

- ⇒ **Find Next** Searches for the next occurrence of the word without changing the currently highlighted text.
- ⇒ **Replace** Replaces the highlighted word with the word you typed in the Replace with box. You can then click Find Next to continue searching, or leave the Replace dialog box open (inactive) and continue editing in your document.
- ⇒ **Replace All** Changes all occurrences of the Find what entry.
- ⇒ **Cancel** Removes the Replace dialog box from the desktop when you don't need it anymore.



Caution: Be careful not to click the Replace All button until you're sure the criteria you've typed in the Find what and Replace with fields are appropriate. It's always a good idea to click Find Next a few times when doing a large search and replace to ensure that the information you typed is correct. Then, when you're sure text is being replaced properly, click the Replace All button to quickly complete the task. As an added precaution, save your document before you do a search and replace. That way, if everything goes haywire, you can close the document without saving it and get your original document back.

Creating Compound Documents in WordPad

A *compound document* includes information from other applications, such as a painting program, a spreadsheet program, or a database program. It might also include sound and video clips. For example, you could paste sales information from a spreadsheet program like Microsoft Excel into a WordPad document to create a compound document. The pasted information is linked with the Microsoft Excel spreadsheet, so any time the Excel spreadsheet is updated, the information in the WordPad document is automatically updated as well. This dynamic linking is made possible by Microsoft's object linking and embedding (OLE) standard.

Compound documents can contain a variety of information. For example, you could paste sound clips from a sales meeting into the sales meeting report and send the document to other users over the company network. When others receive such a document, they can read the text and double-click on the sound objects to hear real voices.

There are two approaches to creating compound documents:

- ⇒ **Linking** A *linked* object maintains a connection with a file that is stored on a disk. When the file is updated, the linked information that you pasted in your WordPad document is also updated.
- ⇒ **Embedding** An *embedded* object is simply pasted in a document from another file without a link. It is not stored in the compound document as a separate file. To update embedded information, you double-click it in the compound document. The application used to create the information then starts up so you can edit the information. If the object is a sound or video clip, it “plays back” when it is double-clicked.

The embedded approach has the advantage of storing all the information related to a project in a single file. This way, the information is easier to track and copy to other locations or users. The linking approach has the advantage of keeping information up to date, because as the original information files are updated, so is the compound document. If other people are updating the originals, you can make sure the information in your document is up to date by using OLE links.

Linking and Embedding Techniques

You can link or embed an object in a WordPad document by using cut and paste techniques or by choosing the New Object option on the Insert menu. The latter method lets you do everything from a dialog box, so we'll use that method for the following exercises.

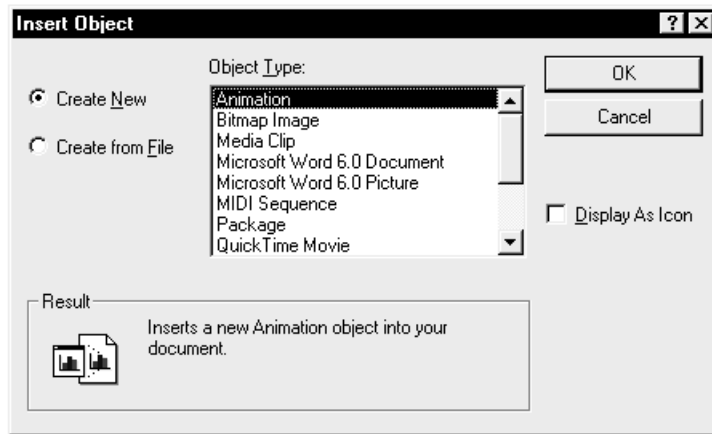
Creating an Embedded Object

Follow these instructions to embed an object in a document. The object won't have dynamic links or be stored as separate files, but will be stored with a compound document.

1. Position the cursor at the place in your document where you want to insert an object like a picture, chart, or spreadsheet matrix.
2. Choose New Object from the Insert menu to open the dialog box shown in Figure 10-10.
3. The Object Type field lists applications on your system that can supply linked or embedded objects to WordPad. Click the type of object you want to insert. For this example, choose Bitmap Image.
4. Click Display As Icon if you want the object to appear as an icon. For example, rather than the picture itself, a picture you create in Paint would appear in your document as a Paint icon. To edit it or view it, you simply double-click the icon.

The Insert Object dialog box for embedding objects in compound documents

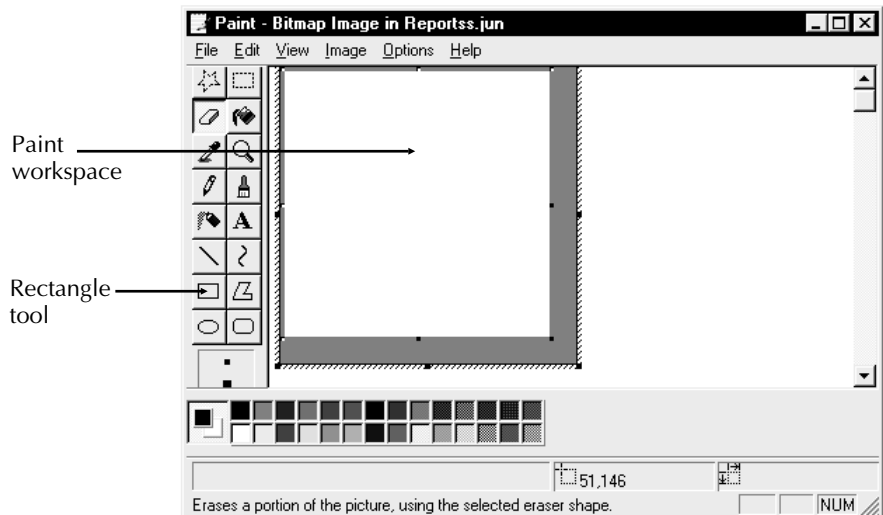
Figure 10-10.



5. Click the OK button. The WordPad window converts to a Paint window, as shown in Figure 10-11. Note that you are still working with your WordPad document, but all the controls and menu items have converted to Paint control and menu items.

Inserting a bitmap image in a WordPad document

Figure 10-11.



6. Now you can create a picture using Paintbrush tools. For example, click the rectangle tool (it is shown in the picture) and create a few rectangles in the workspace by clicking and dragging with the mouse.
7. When you're done, click the white blank space to the right of the workspace. The WordPad window reappears and you see the new object in the document.
8. To continue editing the object now or the next time you open this document, simply double-click it in your WordPad document.

Inserting Linked Objects

A linked object in a document is connected to a separate file stored on disk. When you edit the file, the linked information in WordPad is updated. To insert a linked object in a WordPad document, follow these steps:

1. Position the cursor at the place in your document where you want to insert an object like a picture, chart, or spreadsheet matrix.
2. Choose New Object from the Insert menu to open the Insert Object dialog box.
3. Click the Create from File option. The dialog box changes, as shown in Figure 10-12.
4. Click the Link checkbox to create a linked object.
5. Click the Browse button to locate the file with the information you want to link to your WordPad document.
6. Select the file you located. The object appears in your WordPad document.

In this procedure, the file holding the information you wanted to link to your WordPad document had already been created. If you hadn't created the information yet, you could have switched to another application, created the information, and saved it as a file before linking it to your WordPad document.

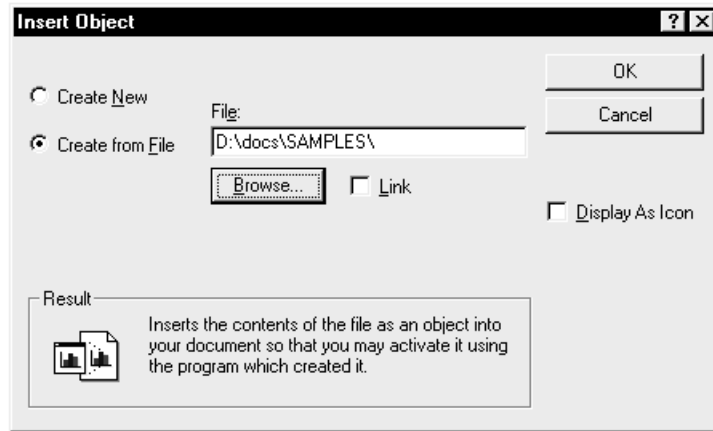
Now when you make changes to the file you selected in step 5, those changes will be made to your WordPad document as well. Usually spreadsheet data and charts are linked to WordPad documents.

Options for Embedding and Linking

The Edit menu offers options for updating and viewing information about embedded and linked objects. You first click the object of interest, then choose one of the options discussed below:

Inserting a
linked object
in a WordPad
document

Figure 10-12.

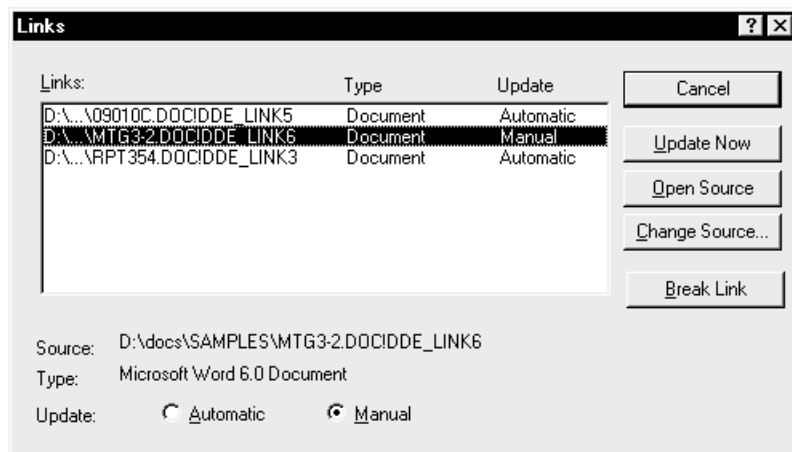


Links Option

The Links option on the Edit menu displays the dialog box shown in Figure 10-13, which provides information about a linked object and its properties. The large window displays the name of the selected object, its type, and the method by which it is updated.

Getting
information
about a linked
object

Figure 10-13.



Here are what the buttons on the Links dialog box are for:

- ⇒ **Update method** You can choose the update method in the Update field. Recall that the information in linked objects is taken from an external file. If the file is changed, the linked object is updated. You can choose to update the linked object automatically (when you open the compound document containing the object) or manually. If you choose the Manual option, you must open the Links dialog box and choose the Update Now button to update the object.
- ⇒ **Update Now** As mentioned above, you click this button to manually update a linked object.
- ⇒ **Open Source** Click this button to open the selected object for editing. Clicking this button is the same as double-clicking directly on the object.
- ⇒ **Change Source** Click this button to get to the original file that the object is linked to. The standard Open dialog box appears.
- ⇒ **Break Link** Click this button to remove the link between the object in the document and the source file. The original object still exists and you can edit it, but you need to insert a new link if you want it in your document.

Object Properties

The Object Properties option on the Edit menu lets you view additional information about an embedded or linked object. Many of the options are similar to the Links dialog box. You first select an object, then choose Object Properties from the Edit menu. The dialog box has three tabs called General, View, and Link. The General tab displays information about the object, including its type and size, and the Link tab provides the same functions as the Links dialog box (see Figure 10-13). The View tab is shown in Figure 10-14.

Here are the options in this dialog box:

- ⇒ **Appearance** In this field, choose whether you want the object to appear in its original form (picture, numbers, text, etc.), or as an icon that shows which application was used to create it.
- ⇒ **Scale** In the Scale field, you can change the size of the object as it appears in your document. Click the up- or down-arrow button to adjust the scale.

Printing WordPad Documents

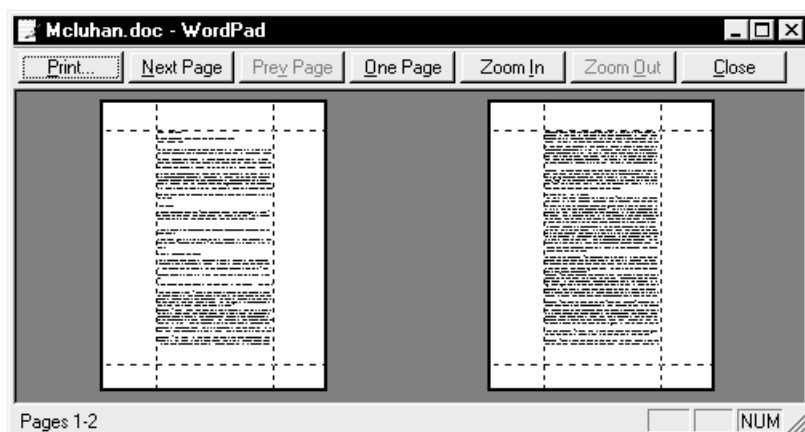
Once you've created a document, you can preview it before you print it. Don't forget to save the document as well. The Preview and Print options are covered here.

See the
properties of a
linked object
Figure 10-14.



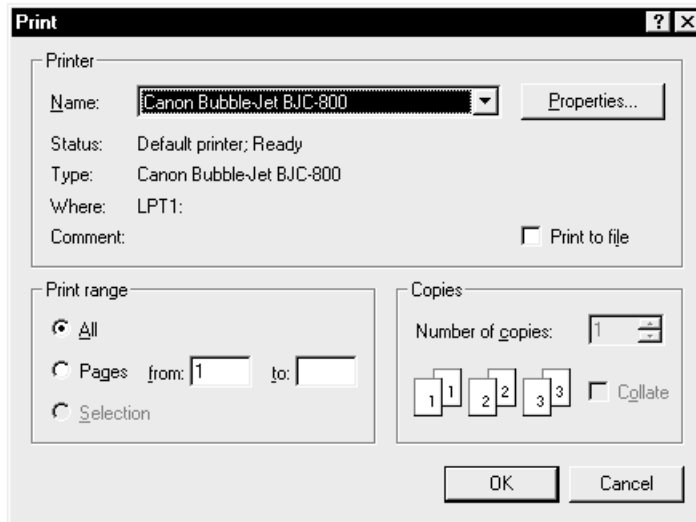
Previewing Documents Before You Print Them

Choose Print Preview from the File menu to display a dialog box similar to the one shown here. Your document appears in the window as if on a printed sheet so you can see how it is laid out.



Printing a
WordPad
document

Figure 10-15.



The options in the Preview dialog box are as follows:

- ⇒ Choose Print to print the document.
- ⇒ Click Next Page or Previous Page to move up or down through long documents.
- ⇒ Click the One Page button or Two Page button (the button name changes depending on how many pages are already displayed) to view one or two pages at a time.
- ⇒ Choose Zoom In to get a detailed view of a part of a document, then choose Zoom Out to return to the previous view.
- ⇒ Choose Close to return to the normal editing mode.

Printing WordPad Documents

You can print a document from the preview mode by choosing the Print button, or by you can print it directly by choosing Print on the File menu. The basic printing options are discussed here. Refer to Appendix B for more detailed information on printer setup and printer settings. When you choose Print, the dialog box shown in Figure 10-15 appears.

Here's what you can do from this dialog box:

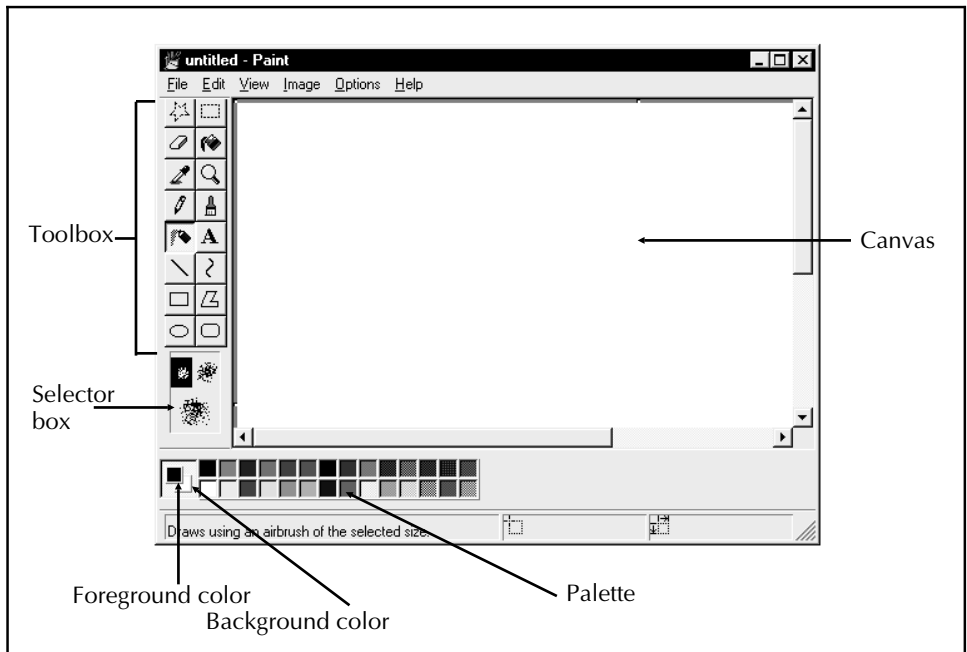
- ⇒ To change printers, click the down-arrow button in the Name field.
- ⇒ You can change the properties of the selected printer by clicking the Properties button.
- ⇒ Click All to print the entire document, or click Pages and specify a page range in the from and to fields.
- ⇒ If you have highlighted a block of text in the document, you can click Selection to print only the highlighted text.
- ⇒ In the Copies field, specify the number of copies and whether you want to collate the printouts.

Windows Paint is a bitmap painting program with a full set of painting tools and a wide range of colors. You can create business graphics, company logos, illustrations, maps, and many other types of artwork with Paint. You can use cut and paste techniques to add Paint creations to WordPad documents and to many other types of documents as well. You can even create pictures and place them on the Windows 95 desktop. Enjoy yourself and experiment as you work through this chapter.

Introducing Paint

This section introduces you to the Paint window and the painting tools. You can experiment if you like, but you'll get a chance to work through some exercises in the next section.

Start Paint now by clicking the Start button, then Programs, then Accessories, then Paint or by double-clicking the shortcut object if you created one on the desktop. If you didn't create a Paint shortcut object, refer to "Shortcuts for Starting Programs" in Chapter 4. The Paint window opens, as shown in Figure 11-1.



The Paint window
Figure 11-1.

The Paint Window

The Paint window consists of a workspace, or *canvas*, where you paint pictures. To the left of the canvas is the Toolbox, which contains a set of painting tools. At the bottom of the canvas is the color palette, where you select the color you want to paint with. To the left of that is the Selection box, where you select the width of lines or pen tips to use for the Brush, Line, Eraser, and other tools. To paint, select a tool, a color, and a line width, and then start painting on the canvas. Painting is as simple as pointing, clicking, and dragging.

The Color Palette

The color palette is the strip of color boxes at the bottom of the Paint window. When a color is selected, it appears in the box on the left of the color palette. This box is called the *color selection box*. If you click a color with the left mouse button, that color appears in the foreground box in the color selection box. If you click a color with the right mouse button, it appears in the background box.



Tip: You can change the color of the canvas by clicking a color with the right mouse button and choosing New from the File menu. However, doing this erases any work you’ve created on the canvas, so only change canvas colors before you start a new drawing or painting.














You paint with the foreground color in the color selection box when painting with most tools. However, when you paint filled boxes, circles, and polygons, the background color becomes the border and the foreground color becomes the fill color for the box, circle, or polygon.

The Toolbox

The Toolbox contains a full set of tools for painting on the canvas. Simply click a tool, point to the canvas, and paint by clicking and dragging the mouse. When you paint with most tools, the colors in the color selection box and the line width shown in the Selector box appear on the canvas. Table 11-1 shows a list of the tools and what each does.



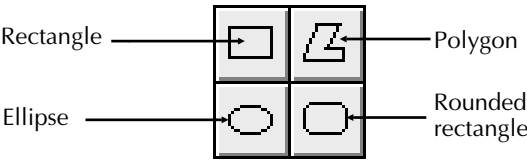
Note: Use the Free-form select tool and the Select tool to define *cutouts*, which are selected parts of a picture that you can move, copy, or delete.

	Name	What It Does
	Free-form select tool	Selects irregularly shaped cutouts.
	Select tool	Selects square or rectangular cutouts.
	Eraser	Converts all colors to the currently selected background color.
	Fill with color tool	Fills enclosed areas with the currently selected foreground color.
	Eyedropper tool	"Picks up" a color on your painting that you want to use somewhere else. The color you click becomes the foreground color.
	Magnifier	Lets you zoom in to any part of your painting to view or edit the pixels (dots) that make up the painting.
	Pencil	Works just like a pencil. You can adjust the width of the point.
	Brush	"Paints" in a freehand style.
	Airbrush	Sprays a dot pattern of the currently selected foreground color. You can adjust the spray width.
	Text	Lets you type text for captions and titles.
	Line	Draws straight lines at a variety of angles.
	Curve	Lets you create curved shapes. This is a freehand painting tool.

The Paint
Tools

Table 11-1.

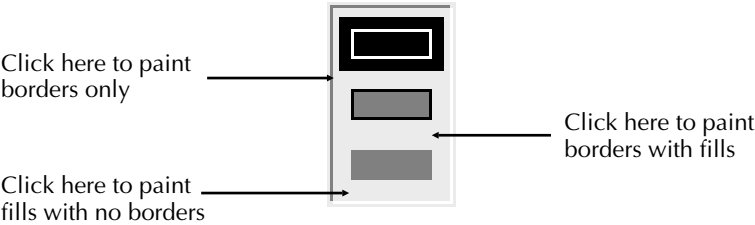
The remaining Paint tools are shown here; they are used to create hollow and filled shapes:



Here is what these tools do:

Tool	Function
Rectangle	Paints square or rectangular shapes.
Polygon	Creates irregularly shaped triangles, boxes, and other multisided objects.
Ellipse	Creates circles and ellipses.
Rounded rectangle	Creates squares and rectangles with rounded corners.

When you click one of the tools, the Selector box changes, as shown here. By clicking one of the options, you can paint boxes, circles, and polygons as borders-only, borders with fill, and fill without borders. The border is the current foreground color in the color selection box. The fill is the current background color.



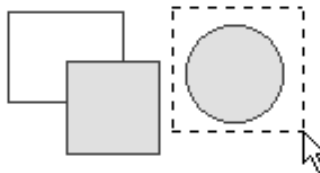
Tip: To paint squares and circles (rather than rectangles and ellipses), hold down the SHIFT key while dragging the mouse.

Painting Techniques

Now that you know what the tools in the Paint window are, you're ready to try your hand at an actual painting. Everything

might seem a little abstract right now, but Paint is one of those programs that is easier to use than to explain. In the following exercises, you'll learn techniques to improve the quality of your pictures. You'll also learn how to paint efficiently.

1. Click the Rectangle tool in the Toolbox.
2. Left-click the red color box in the color palette.
3. Point to the canvas, then click and drag to create a red box. Release the mouse button.
4. In the Selector box, click the middle option to paint a filled rectangle.
5. Right-click yellow in the color palette to create a yellow-filled box with a red border.
6. Paint a square box by holding the **SHIFT** key as you click and drag on the canvas. The square is filled with yellow.
7. Repeat the above steps with the Ellipse tool or Polygon tool. When using the Polygon tool, you can paint any number of line segments, but you must join the first and last points if you want to create a filled object.
8. Select part of the drawing and move it to another location. Click the Select tool, then point to the upper left of an object you want to move and click and drag to its lower right. This creates a cutout around the object, as shown here:



Tip: If a cutout includes parts of a drawing that you don't want to select, try step 8 again. You might need to choose the Free-form select tool to create an irregular cutout around the object.

9. Click anywhere in the cutout and, while holding the mouse button, drag it to a new location. Release the mouse to "set" it at its new location.

10. To create a copy of a cutout, first follow step 8 again to create a cutout, then hold the **CTRL** key while clicking and dragging the cutout.
11. Click the Eraser tool to erase part of your painting.
12. To change an existing color to a new color using the Eraser (and without changing other colors), left-click the color you want to change in the color palette, then right-click the color you want to change it to in the color palette. Right-click the mouse and drag through the color you want to change on the canvas. All other colors are not affected.

Now you can continue experimenting on your own. Believe it or not, you've just learned about 80 percent of what you need to know to create simple pictures with Paint. The remainder of this chapter explores features, tips, and tricks in more detail.

Besides using the Eraser, another way to make corrections is to choose the Undo command on the Edit menu. Select this command after pasting in an object you don't want or after making radical changes, like stretching or inverting objects that don't turn out well.



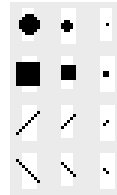
Tip: When you select Undo, only your most recent changes are undone. In previous versions of Windows Paint, the Undo command undid all the changes you made since selecting the current tool.

Cursor Shapes and Cursor Positions

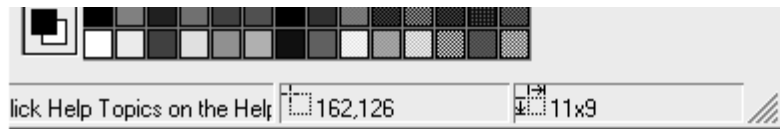
The mouse pointer changes shape, depending on what you are doing:

- ⇒ The mouse cursor is an arrow when you select menu commands, tools, and colors.
- ⇒ The cursor changes to a cross hair on the canvas when you paint with the Cutout, Line, Rectangle, Ellipse, and Polygon tools.
- ⇒ When working with the Text tool, the cursor is an I-beam.
- ⇒ When you select the Eraser tools, the cursor is a box. You can select a size in the Selector box.

- **The Brush tool is unique in that you can select from a collection of different brush tips, which are available in the Selector box, as shown here:**



The status bar at the bottom of the Paint window tells you the x and y coordinates of the cursor on the canvas, as shown here:



↑
Cursor position

↑
Cutout size

By default, the canvas is a grid made up of 640×480 pels (picture elements) unless you specify a larger or smaller canvas. Pels, by the way, are the same thing as *pixels*, which are the thousands of tiny dots that together make up a picture.

The upper-left coordinate is 0,0 and the lower-right coordinate is 639,479. As you move the mouse, the current cursor position is indicated by the left numbers in the status bar. When you click and drag to paint a box, ellipse, or other shape, the right box shows the number of pixels from the starting position. So if you want to create a box that is 100 pixels square with its upper-corner at 150,150, you would first position the cursor at 150,150, then click and drag down until the right coordinates indicate 100,100.



Tip: Normally, there are 96 pixels per inch, so if you want to print a one inch square box, paint a 96×96 pixel box on the

canvas. See “About Image Resolution” later in this chapter to determine the measurements for your system.

The coordinates displayed in the cursor position box are useful in the following cases:

- To create objects of an exact size
- To create several objects that are the same size
- To align objects, such as boxes and circles
- To move objects with precision

Painting Perfect Squares and Circles

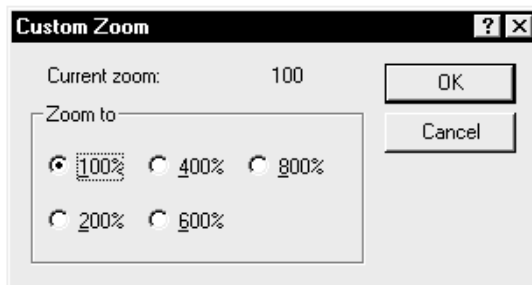
To paint circles rather than ellipses, and paint squares rather than rectangles, hold the **SHIFT** key as you drag with the mouse. This is called painting “with constraint.” When you select the Line or Polygon tool, holding **SHIFT** restricts, or constrains, mouse movements to 45-degree increments.

Zooming In for Detail

The Zoom In command lets you magnify a part of a picture so you can change its individual picture elements (pels). In the zoom mode, you can change the color of individual pels with the mouse, and in so doing change the color composition of a picture in subtle ways. To see how the zoom mode works, follow these steps:

1. Click the Magnifier in the Toolbox.
2. Select a zoom factor in the Selector box. You can magnify to 2, 6, or 8 times. Click the part of the canvas you want to multiply.
3. Click with the left mouse button to paint pixels of the current foreground color, and click with the right mouse button to paint pixels of the current background color.
4. To return to normal mode, click the Magnifier again and choose 1x in the Selector box.

You can also choose Zoom on the View menu, then choose Custom to display the following dialog box, which has a few other zoom options:



When you're in the zoom mode, you can make fine adjustments to your paintings and correct mistakes. For example, if you accidentally erase part of a drawing, you can fix it in zoom mode. Typically, you paint in normal mode, and then zoom in to add detail or erase colors you don't want.



Tip: You can use most of the Paint tools in zoom mode to make fine adjustments in a number of ways.

The Paint Canvas

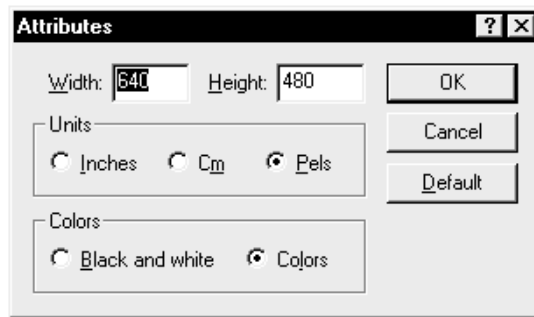
The canvas is the painting area. You can change its color, change its size, and zoom out to see the entire canvas.

Seeing the “Big Picture”

Choose the View Bitmap option from the View menu to see the picture on the canvas in full-screen mode, without the borders, Toolbox, and color palette. You can't do any editing in this mode—just stand back and admire your masterpiece. To return to normal mode, click anywhere in the picture.

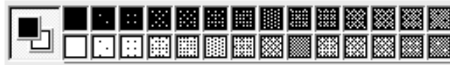
Deciding What Size the Canvas Should Be

To set the size of the canvas, the unit of measurement, and the type of palette you want to use, choose Attributes from the Image menu. The following Image Attributes dialog box appears:



The Attributes dialog box contains the following fields:

- ⇒ **Width and Height** Enter the width and height for the canvas in these fields. The value should correspond to the measurement you pick in the Units field.
- ⇒ **Units** Click the unit of measurement you want to work with—inches, centimeters, or pels. Pels, also known as pixels, are the thousands of dots you see when you choose Zoom In from the View menu.
- ⇒ **Colors** Normally, you work in color, but if you choose Black and white, the color palette changes to the black, gray, and white palette pictured below:



This palette provides a way to specify gray scales when printing on black-and-white printers. Normally, if you print a color picture on a black-and-white printer, Paint assigns gray-scale dot patterns to the various colors.



Note: If you choose the Black and white option while an existing color picture is loaded, Paint converts the colors to black and white. This is useful in some cases, but make sure you don't do it accidentally.

Keep these things in mind when changing the settings on the Attributes dialog box:

- ⇒ Initially, Paint establishes a default canvas size that matches the pixel width and height of your screen, but if you're low on memory, the canvas may be smaller. To gain more workspace, close other applications

if possible, click the Default button in the Attributes dialog box, and open a new canvas by choosing New on the File menu.

- ⇒ You can save disk space when saving pictures by reducing the values in the Width and Height boxes. Reduce the size of the canvas to just the size you need for your finished painting.

With regard to saving disk space by shrinking the size of your canvas, don't feel you need to work on a small canvas all the time. In fact, it's sometimes easier to work on a large canvas so you can move cutouts around, or place them at the bottom of the canvas for later use. When you're ready to save the picture, use the Cutout tool to surround just the part of the canvas you want, and then choose Copy To from the Edit menu to save only the cutout to disk.

About Image Resolution

If you need to use exact measurements when you create pictures, you need to find out how many pels/pixels there are per inch or per centimeter on your screen. To specify a measurement, choose Image Attributes from the Options menu. Click the Units box for inches or centimeters and type **1** in the Width field. Next, click Pels in the Units field and note the value in the Width field. This value tells you the number of pels to inches or centimeters on your screen. Click Cancel to close the Attributes dialog box.

Use the value in the Width box to paint objects that conform to the inch or centimeter scale. For example, if your screen has 96 pels per inch, create a line or box 96 pels wide and print it.

Clearing the Canvas

You can clear the canvas at any time to start a new painting or remove unwanted art. Use one of the following methods:

- ⇒ Choose Clear Image from the Image menu.
- ⇒ Choose the New option on the File menu.
- ⇒ Select one of the Cutout tools and surround the image you want to clear, and then choose Cut from the Edit menu.



T ip: When you select New from the File menu, the canvas becomes the color of the currently selected background color. Be sure to select a white background or the color you want as a canvas before you open a new document.

When You Need More Room on the Canvas

Canvases that are larger than your screen size won't be completely visible in the Paint window. However, you can use the scroll bars to bring other parts of the picture into view. You can also temporarily remove the Toolbox, color selection box, or status bar by clicking the associated option on the View menu.



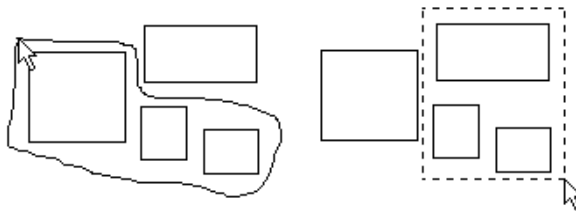
Tip: Select the tool and color you need before you remove the Toolbox and color palette from the screen.

11

Once you're done moving and pasting objects, you can restore the Paint window to its normal size and put the Toolbox, color selection box, and status bar back in place.

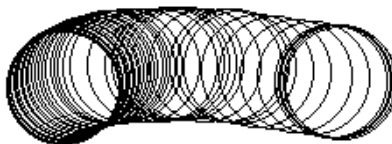
Copying, Moving, and Saving Cutouts

Use the Select tools to create cutouts. A *cutout* is an area of a picture that you can move, copy, and save to disk. Use the Free-form select tool to "cut out" an irregularly shaped object. For example, the Free-form select tool was used on the left in this illustration to cut out the three squares:



In the illustration, the Select tool was used to select the rectangular area on the right. You can't always use the Select tool because it only cuts out rectangles and may select part of a picture you don't want. In those cases, use the Free-form select tool instead. Once you've "cut out" the objects, hold the CTRL key and click and drag to copy them from one place to another. To move them, simply drag without touching the CTRL key.

You can also hold down the SHIFT key to create a “swath” of an object as you drag it, as shown here. In this case, a circle was dragged to create the effect.



When you choose the Free-form select or the Select tool, the Selector box appears as shown here. Choose the top option to copy opaquely or the bottom option to copy transparently:



When you copy transparently, the underlying art shows through the cutout. When you copy opaquely, the underlying art is obscured by the cutout and does not appear in the copy.

When you copy an object opaquely, the entire area within the cutout border, including the canvas color, is copied. Since the entire area in the cutout is copied, it's best to use the Free-form select tool to outline the edges of the object you want to copy.

You can save cutouts that you'll need in the future by choosing the Copy To option from the Edit menu. Cutout files saved in this way are assigned the .BMP extension unless you give them a different extension. Use the Paste From command on the Edit menu to paste in a saved cutout. The object appears in the upper-left corner of your drawing and you can drag it to any position.



Tip: Use the Copy To option instead of the Save or Save As option to save a painting. In this way, you can define only the most essential part of the drawing and reduce the amount of disk space it requires.

A Catalog of Painting Tools

You use the painting tools on the canvas to paint boxes and circles and fill them with color. You can also paint freehand shapes with a brush or an airbrush, and erase lines and color with the eraser tools.

The Eraser Tool

The Eraser replaces everything in its path with the background color in the color selection box. In most cases, you choose a background color for the canvas color before you start erasing. After you click the Eraser tool, you can choose an eraser size in the Selector box.



Tip: To erase small details, click the Magnifier tool to zoom in and remove pixels (also known as pels) bit by bit.

The Color Eraser

You can use the Eraser tool to erase only specific colors. For example, if your painting contains red, blue, and green elements, you can change the red elements to yellow using the eraser without affecting the other colors, even though you drag over them with the eraser.

In the color palette, click the color you want to change with the left mouse button and the color you want to change it to with the right mouse button. Make sure the Eraser tool is selected, then point to the canvas, click the right mouse button, and drag over the parts of your painting you want to change.

The Airbrush

The Airbrush sprays the foreground color in a dot pattern onto the canvas. Simply point, click, and drag to paint with the Airbrush. Hold down the SHIFT key to spray along a straight line. Select a width in the Selector box to change the width and density of the spray pattern, as shown here:



The Brush

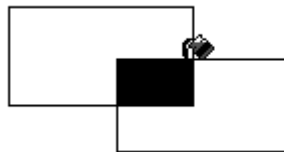
Use the Brush to paint freehand with different brush shapes and sizes. Choose a brush point in the Selector box, then paint in the drawing area for different effects, as shown here:



Be sure to select a color in the color palette before you begin painting with the brush and trying different line widths. You can erase with the brush by selecting white (or the color of your canvas) as the foreground color.

The Fill with Color Tool

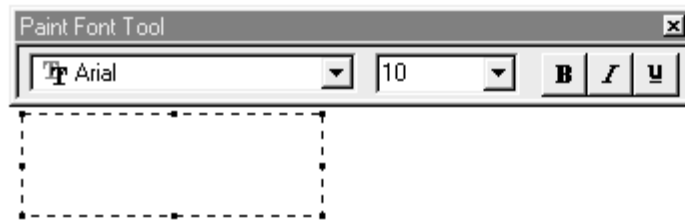
The Fill with color tool is used to fill closed areas with the foreground color. A closed area is an area completely surrounded by a border, such as a box or circle, or a solid color completely surrounded by another color. To fill a closed area with color, point the tip of the tool in the enclosed area and click, as shown here:



Tip: Choose the Undo command if the color spills out of the closed area. You may need to zoom in and add pixels to areas that aren't completely closed up.

The Text Tool

You use the Text tool to add captions and other text to paintings. First select the tool, then drag out a rectangle in the picture where you want the text to be. The Paint font tool appears, as shown here, so you can choose a font, size, and style. If this font menu does not appear, choose Text Toolbar on the View menu.



Type the text for your caption in the rectangle. You can use normal editing techniques to backspace and insert characters. When you are done, click outside the rectangle or click another tool. This “sets” the font so it can’t be edited without starting over.



Tip: You can choose a different color from the color palette before typing text.

The Line Tool

You use the Line tool to paint a straight line at an angle with the foreground color. Hold down the SHIFT key while dragging the mouse to create lines at 45-degree angles. Before you paint lines with the Line tool, choose a color from the palette and a line width selected from the Selector box.

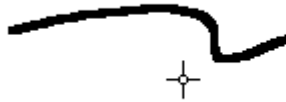
The Curve Tool

The Curve tool is one of the most interesting tool in Paint. It paints curves using a simple “anchor and pull” technique. Experiment with this tool to familiarize yourself with it. Think of the Curve tool as a rubber band stretched between two posts. First you decide where the posts go, and then you stretch the rubber band between the posts. Try painting a curved line now:

1. Select the Curve tool, a foreground color, and a line width.
2. Move the pointer to the canvas, and then click where you want the first anchor post to be.
3. Hold the mouse button and drag to create a line. Release the mouse to create the second post.
4. Click and hold above or below the line. The line bows out toward the pointer position, as shown here:



5. Drag the mouse around on the canvas, and then release the button to set the curve.
6. You can add one more curve. Click below the line, as shown here:



7. Drag the mouse around, and then release the button when the curve looks the way you want.

You can create an enclosed curve that has a teardrop or airfoil shape by following these steps:

1. Click on the canvas to create the first post.
2. Click elsewhere on the canvas to create the second post.
3. Click at a third location on the canvas, then hold and drag the mouse to reshape the curve, as shown here:



4. Release the mouse when the object looks the way you want it to.

The Rectangle, Ellipse, and Polygon Tools

You can create hollow or filled shapes with the Rectangle, Ellipse, and Polygon tools. As usual, you can use any color and line width. You've already created boxes and circles in the previous exercises. Try the following to create a polygon:

1. Click the Polygon tool in the Toolbox.
2. Click the middle box in the Selector box to create a filled polygon.
3. Click on the canvas to create a starting point, then drag to another point and release the mouse button to draw the first line.
4. Draw the next line using either of two methods. Either click and drag a line out to a new point, or point to where you want to draw a line, then

click. Either method produces the same line, but the first method lets you see the line and adjust its position before “setting” it in place.

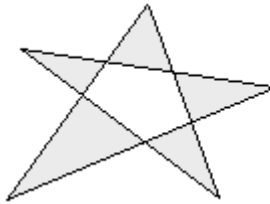
5. Continue clicking at random points to expand the polygon, and then click the original starting point to close the polygon (or click the Polygon tool to automatically close the polygon).



T ip: You can use the Polygon tool to “outline” an existing shape. Simply click at various points as you outline the object.

11

You must click exactly on the original starting point for the polygon to “close up” at the position you want. Choose the Filled polygon tool and follow the steps again to create several sides for the polygon. End by clicking at the starting point. All enclosed spaces created by the polygon are filled. The following illustrates how the tips of a five-pointed star are filled when using the Filled polygon tool:



Advanced Paint Techniques

This section shows you techniques for manipulating cutout objects. You must first select a cutout, then choose one of the flip, rotate, stretch, skew, or invert options on the Image menu, as discussed here.



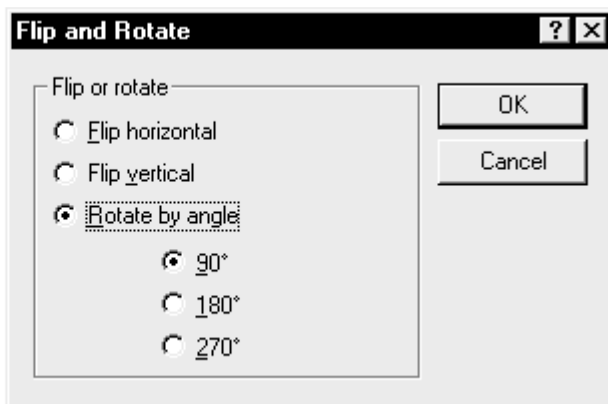
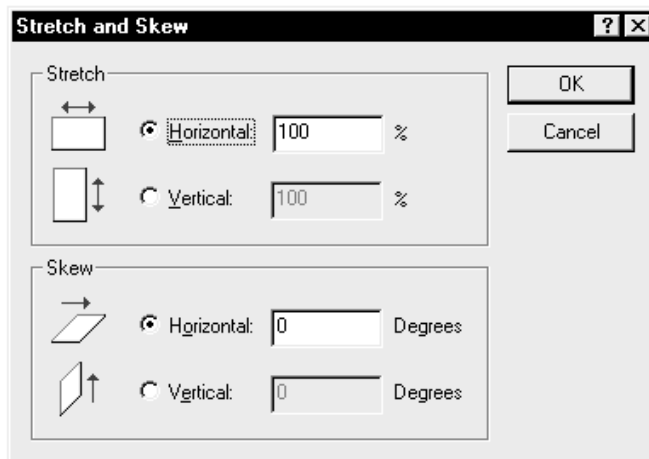
T ip: You can flip, rotate, stretch, and skew a cutout as many times as you want with different parameters. For example, after stretching an object in one direction, you can stretch again in another direction.

Flipping and Rotating Objects

When you choose the Flip and Rotate option on the Image menu, the following dialog box appears. Simply click one of the options and click OK to flip or rotate the selected object. If you choose Rotate by angle, you can rotate the object by 90, 180, or 270 degrees.

Choose Stretch and Skew on the Image menu to manipulate a cutout

Figure 11-2.

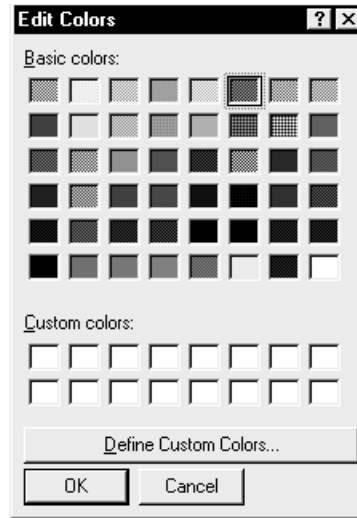


Stretching and Skewing Objects

Choose the Stretch and Skew option on the Image menu to change the size and tilt of an object. The dialog box shown in Figure 11-2 appears. In the Stretch field, specify by which percentage you want to shrink or enlarge the cutout. Enter negative values to shrink the object. In the Skew field, specify the number of degrees you want to tilt an object. Remember, you can repeat these steps until the cutout is the size or shape you want.

Double-click a color in the color palette to display this dialog box, and choose a new color here

Figure 11-3.



Inverting Colors

Click the Invert Colors option on the Image menu to change the colors of a cutout. One practical use of this feature is to reverse text—that is, change black text against a white background into white text against a black background. Inverting also gives you a way to make copies of cutouts look different by changing their colors.

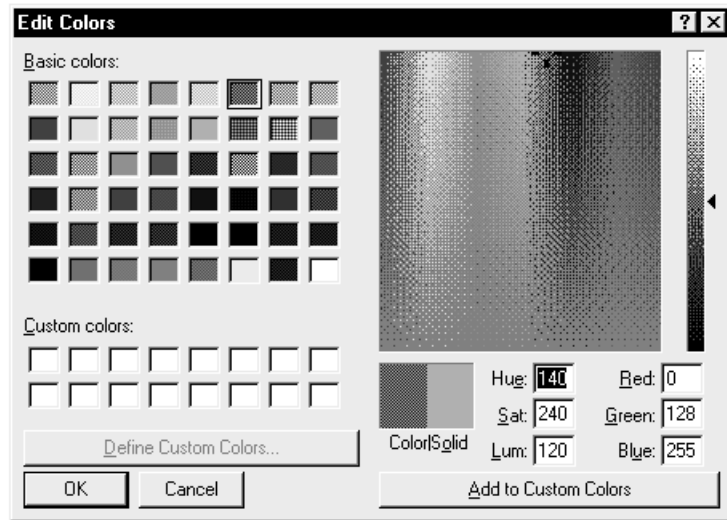
When inverted, black changes to white and white changes to black. Dark gray changes to light gray and light gray to dark gray. Other colors change as follows:

- ⇒ Reds and light blues invert
- ⇒ Yellows and dark blues invert
- ⇒ Greens and lavenders invert

Parts of the canvas included inside a cutout area are also inverted, so you may need to use the Eraser (or zoom in mode) to remove unwanted colors around an object after inverting it.

You can create your own custom colors in this dialog box

Figure 11-4.



Creating Custom Colors

You can create—that is, mix—your own Paint colors. When you create special colors, they replace the colors in the color palette. However, you can save special color palette combinations to disk and use them for different paintings.

Replacing the Colors on the Palette

To change a color, double-click the color you want to change in the color palette, then choose a new color from the Edit Color dialog box that appears. It is shown in Figure 11-3. Simply click the new color and click OK to make the replacement.

Editing Colors

To create your own colors, open the Edit Colors dialog box as described above, or choose Edit Colors from the Options menu. When the Edit Colors dialog box appears, click the Define Custom Colors button. The dialog box shown in Figure 11-4 appears.

The color and numeric value of the current color are displayed in this dialog box. Slide the arrow to the right of the color box to manually adjust colors, or else enter numeric values in the Hue, Sat (saturation), Lum (luminance), Red, Green, and Blue fields. You can also just click in the color box to get

different colors. Your color choice appears in the Color|Solid box. When you find a color you like, click either the color or solid version of the color in the Color|Solid field, then click the Add to Custom Colors button. The new color appears on the right in the Custom Color field.



Note: If your video can't display a full range of colors, you see two colors in the Color|Solid box. The Solid color is the closest color to the color you picked that your video system can display.

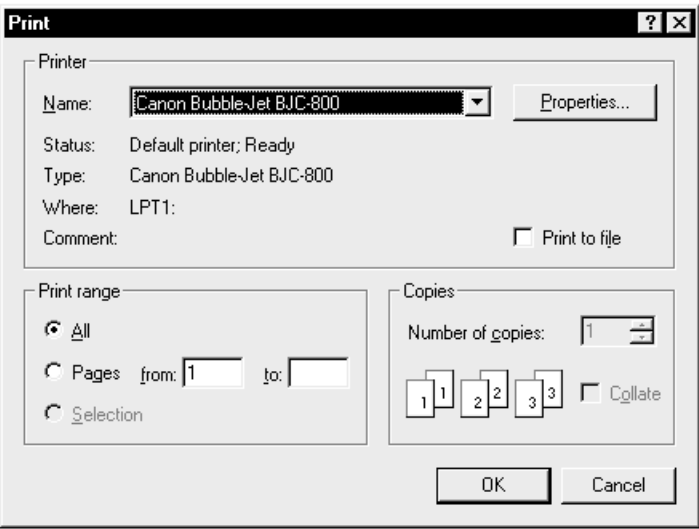
To add the new color to the normal color box, click it in the Custom Color field and click the OK button. The new color replaces the old color.

Saving and Retrieving Colors

Save the color palette after you've made changes to it by choosing the Save Colors option on the Options menu. When the Save dialog box appears, type the name for the color palette file. Paint recommends the .PAL extension for the file. To load a customized palette at any time, choose Get Colors from the Options menu.

Saving Your Work

Use the Save and Save As commands on the File menu to save a Paint canvas to a disk file. To save cutouts, choose the Copy To option on the Edit menu.



The Print dialog box
Figure 11-5.

When it saves a file, Paint automatically saves it in the .BMP (bitmap) format. However, if you choose the Save As option, you can choose a different file format. When the Save As dialog box opens, you can check one of the following options by clicking the down-arrow button in the Save as Type field:

- ⇒ **Monochrome Bitmap with BMP Extension** Pick this option if your art does not include colors. Files saved in this format use less disk space.
- ⇒ **16-Color Bitmap with BMP Extension** This is the default Paint file format that supports 16 colors.
- ⇒ **256-Color Bitmap** A high-color format that requires more disk space but is only necessary if your files contain this many colors. Your display must be set to handle this number of colors.
- ⇒ **24-Bit Bitmap** This format is only appropriate for scanned images such as photographs that contain a lot of colors. Your display must be set to handle this number of colors.

Printing Pictures

You use the Print option on the File menu to print paintings. When you choose this option, you see the Print dialog box, which is shown in the Figure 11-5.

Paint's Print dialog box is similar to WordPad's Print dialog box. You can select or change the following options:

- ⇒ **In the Name box, choose a different printer.**
- ⇒ **In the Print range field, choose to print all the pages or some of the pages.**
- ⇒ **In the Copies field, specify the number of copies and whether you want them collated.**
- ⇒ **Click Print to file to print the picture to a file on disk. You'll be asked to type a filename when you click OK.**



Tip: You can change the properties of a printer by clicking the Properties button. Then you can change the paper type and orientation, and the graphic quality and intensity.



Tip: Since colors are converted to dithered patterns on black-and-white printers, you may want to adjust the intensity controls. Click the Properties button, then click the Graphics tab and adjust the settings on the dialog box.

Tips and Tricks

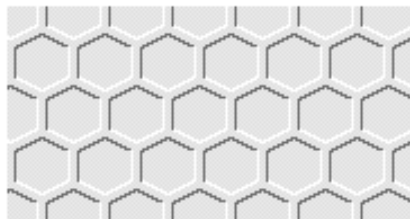
Now that you've learned about the features of Paint, you may find the following of interest. Here you'll learn how to create desktop tiles and desktop images, and phone number and notes wallpaper as well.

Putting Tiles on the Desktop

You can decorate your Windows 95 desktop by putting tiled images on it. You first create the image, then save it as a file, and finally install it as tiled wallpaper on the desktop.

Put on your artist's cap and follow these steps:

1. Open a new canvas by choosing New from the File menu.
2. Draw a picture on an area of the canvas that is approximately two inches square. Don't worry about exact sizes. Tiled images are placed right next to each other on the desktop, so consider how the pictures you draw and the colors you use will look when they are placed next to each other like tiles.
3. When you're done painting, choose the Select tool and select the image. Only select the part you want to be made into a tile. You can create objects with connecting points so they appear to flow together when they are tiled. In the honeycomb pattern pictured here, the picture on the left was used to create the tile pattern on the right.



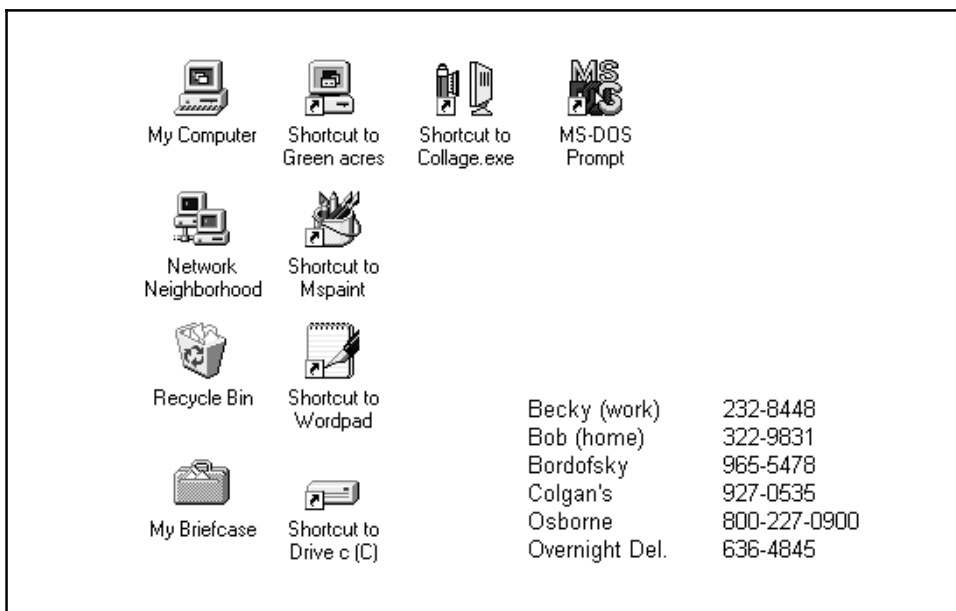
4. When you have selected the part of your drawing you want to be a tile on the desktop, choose **Copy To** from the **Edit** menu and save the cutout in the **Windows** directory.
5. Right-click a blank part of the **Windows 95** desktop and choose the **Properties** option.
6. In the **Wallpaper** field, pick the file you just created, then click the **Tile** option and the **OK** button. Your image will appear as a tile on the desktop.



Note: The **Paint** **File** menu also has options called **Set as Wallpaper (Tiled)** and **Set as Wallpaper (Centered)**. You can use these options to set the current image as wallpaper, but only after first saving the file. To tile a cutout, you still need to go through step 3 above.

Using phone numbers as wallpaper

Figure 11-6.



Creating Images for the Desktop

You can create paintings that fit over the entire desktop. For example, you could make a picture of your kids or your favorite sports car. Here are the steps for creating a full-size desktop image:

- 1. Choose Attributes from the Image menu.**
- 2. Click the Default button and then click OK. This creates a new canvas that is the size of your screen.**



Tip: If the canvas is smaller than your screen, you don't have enough available memory and you should not install wallpaper.

- 3. Paint the image you want to appear on the desktop. You can also use a scanner or import pictures from other sources.**



Tip: If you have a scanner, you can create personalized cards or screens by scanning pictures of your kids (or dogs, cats, birds, and so on), and then adding captions under the pictures.

- 4. Save the image with the Save As option on the File menu. Be sure to save the file in the Windows directory.**
- 5. Right-click a blank portion of the Windows 95 desktop, and click the Properties option.**
- 6. In the Wallpaper field, pick the file you just created, and then click the Center option and the OK button. Your image becomes the desktop wallpaper.**

Phone Number and Notes Wallpaper

Another wallpaper idea is to create a file in WordPad that has important phone numbers and dates. You create the file in WordPad because it's easier to update the file in WordPad when phone numbers or dates change. Once you've typed the text in WordPad, you copy it to the Clipboard and paste it in Paint. You

then position the text in the Paint canvas at the position where you want it to appear on your desktop and save the file.

For example, you could put a column of phone numbers in the lower-right portion of the canvas, which would make the numbers appear in the lower-right portion of the desktop. This desktop area is often blank, since objects are usually placed on the left side of the desktop. Figure 11-6 shows some phone numbers on the desktop. Notice how the phone numbers are positioned on a blank portion of the desktop.

Windows 95 comes with a number of accessories to make your life a little easier to manage. The accessories described in this chapter are:

- ⇒ **Quick Viewer** Opens documents for a quick view of their contents
- ⇒ **Notepad** A small text editor
- ⇒ **Phone Dialer** A telephone number index system and dialer
- ⇒ **Calculator** A standard or scientific desktop calculator
- ⇒ **Party Line** Not really a game, but a unique way to communicate with other people in your organization if your computer is connected to a network

Others accessories, including the Fax viewer and Fax Cover Page editor, are discussed in Chapter 16. Multimedia accessories for working with sound and video are discussed in Chapter 22.

Shortcuts for Starting Accessories

You can make an accessory easier to start by creating a shortcut for it on the desktop. Right-click the desktop, then choose **New and Shortcut**, as described in “Using the Shortcut Wizard” in Chapter 6. When the **Create Shortcut** dialog box appears, type the program name of the accessory you want to create a shortcut for. Following is a list of accessories, along with the corresponding program names that you type in the dialog box. You can access the Quick Viewer simply by right-clicking a document.

Notepad	NOTEPAD.EXE
Phone Dialer	DIALER.EXE
Calculator	CALC.EXE
Rumor	RUMOR.EXE

You can also start an accessory automatically when Windows 95 starts by adding it to the **StartUp** folder. To add a program to the **StartUp** folder, follow these steps:

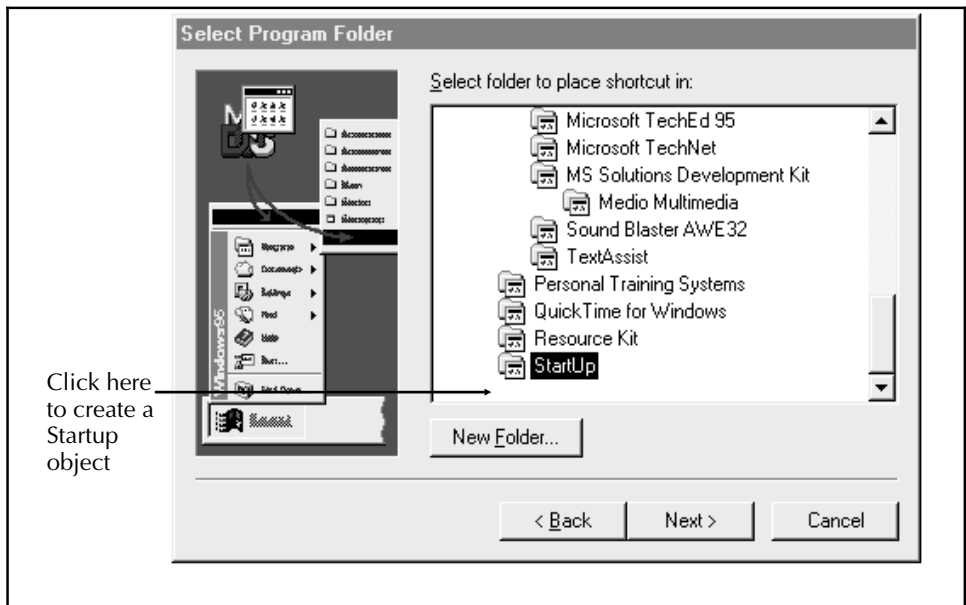
1. From the **Start** menu, choose **Settings**, then **Taskbar**.
2. When the **Taskbar Properties** dialog box appears, click the **Start Menu Programs** Tab.

3. Click the Add button.
4. When the Create Shortcut dialog box appears, type the name of the accessory you want to add to the StartUp menu in the Command line field. For example, type DIALER.EXE in the Command line field to add the Dialer accessory to the StartUp menu.
5. Click Next to display the dialog box shown in Figure 12-1. Scroll down the list and click the StartUp folder.
6. Click Next, then type a name for the accessory on the next dialog box.
7. Click the Finish button to complete the task.

The next time you start Windows 95, the accessory you added to the StartUp folder will start automatically. You can repeat the above steps to add other accessories and programs to the StartUp folder.



Note: To remove a program or accessory from the StartUp folder, follow the steps above, but click the Remove button in step 3; then click the plus sign next to the StartUp folder to open



Starting an accessory automatically when you start Windows 95
Figure 12-1.

The Windows 95 Welcome Screen

Figure 12-2.



it, click the program you want to remove, and click the Remove button.

Displaying the Welcome Screen

The first time you start Windows 95, you see the Welcome to Windows 95 Screen shown in Figure 12-2. (If you don't see the Welcome Screen, you or someone else turned it off by removing the check mark from the box in the lower-left corner.) You can display this window at any time, not just when you turn on the operating system. From the Welcome Screen, you can get a Windows 95 tour, see what's new, register with the Microsoft Network, or view tips for using Windows 95.

To see the Welcome Screen, click the Start button, choose Run, and type Welcome in the Open field of the Run dialog box. Once the window opens, you can put a check mark in the box in the lower-left button to see this screen every time you start Windows.

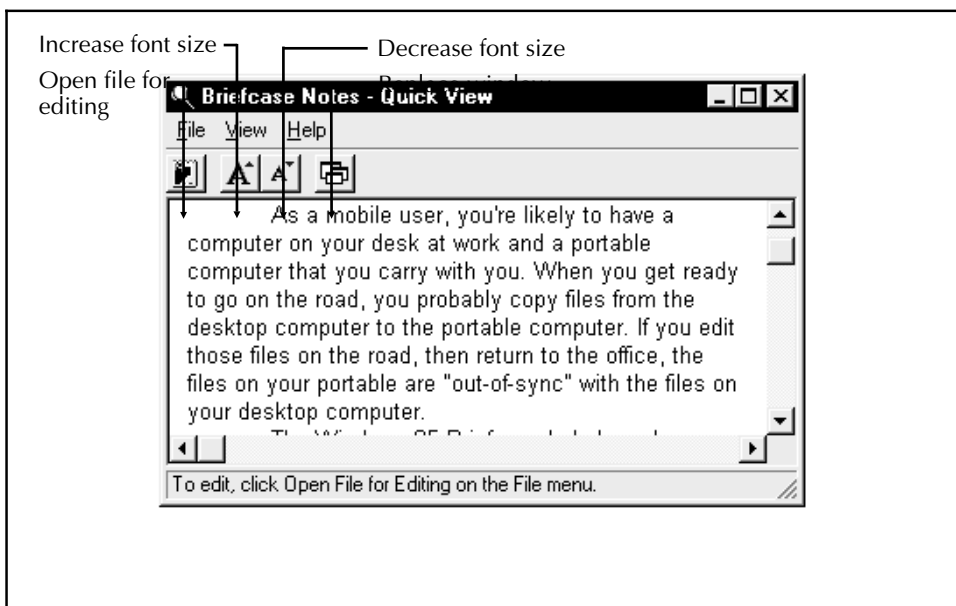
Quick Viewer: Seeing What's in a File

The Windows 95's Quick Viewer lets you quickly look at the contents of a file without fully opening the application used to create it. Not having to

open the application saves time and preserves memory. You use Quick Viewer when you're scanning your file system for files you might want to open and print, or for files you need to copy, move, or delete.

To "quick-view" a document, locate it in the Windows Explorer, right-click it, and choose the Quick View option on the menu that appears:

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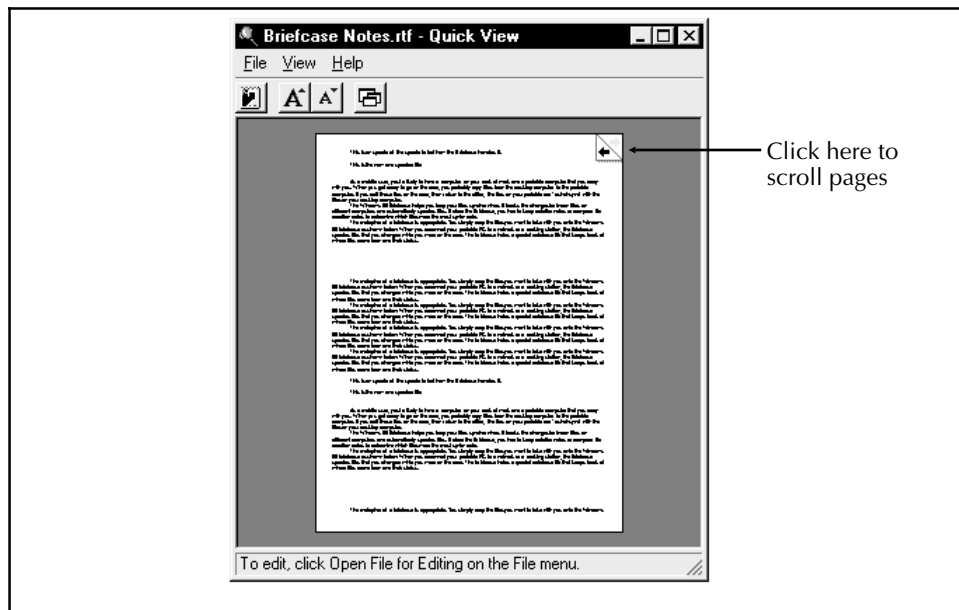
The Quick View window showing what's in the document
Figure 12-3.



In a moment, the Quick View window opens and reveals what's in the document, as shown in Figure 12-3. It takes a moment for Quick Viewer to open the first time, but once the accessory is open you can “quick-view” other documents quickly.

Here are the basic things you need to know about Quick View:

- You can't do any editing or formatting in Quick View itself. To *open* a document in the Quick Viewer for editing, click the Open file for editing button, the leftmost button on the toolbar.



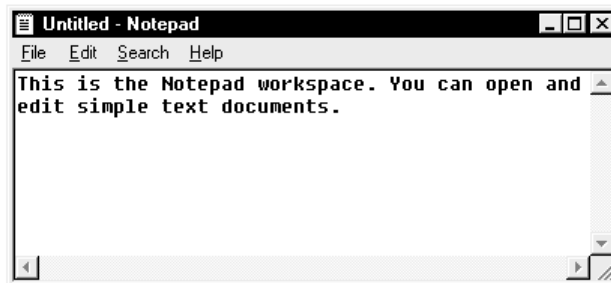
Page View of
a document in
the Quick
View window
Figure 12-4.

- ⇒ You can reduce or enlarge the size of text in the window by clicking the Increase font size or Decrease font size button. These are the buttons with the large and small letter “A” on them.
- ⇒ You can choose a font of your own for displaying text by choosing Font from the View menu.
- ⇒ If you’ve opened a picture, you can choose Landscape or Rotate on the View menu to change its orientation.
- ⇒ Click the Replace Window button, the rightmost button on the toolbar, if you want the next file you “quick-view” to replace what is currently in the Quick View window. If you don’t click this button, another Quick View window opens every time you right-click a file and choose Quick View. By not clicking the Replace window button, you can open several Quick View windows.
- ⇒ Choose Page View from the View menu to view the page layout of a document. A page layout is shown in Figure 12-4. In this view, you can quickly scroll to other pages or pictures in a document by clicking the arrows in the upper-right corner of the page.

Notepad: Editing ASCII Text Files

Notepad is a program for editing ASCII text files, which are files that have no special formatting codes or control characters. (WordPad, on the other hand, has extensive character and paragraph formatting capabilities. In addition, WordPad lets you adjust the margins, indents, and other page layout features.) You use Notepad to edit simple text files. It loads very quickly and is easy to learn and use. Look over the Notepad features covered here, but keep in mind that WordPad or your own personal word processor are better tools for working with documents.

The Notepad window is pictured here



You type text in the workspace and use standard editing techniques to insert, delete, and copy or move text. Notepad offers menu options that are discussed in the following sections.



Note: The Notepad File menu has all the standard open, save, and print options discussed in Chapter 4 under “Using Common Program Features.” You’ll also find information about working with files in Chapter 10, which discusses WordPad.

Editing Text

The Notepad Edit menu has the standard cut, copy, and paste options discussed in Chapter 4. You can also click the Undo option to restore editing changes you made by mistake. The following options are also on the Edit menu:

- ⇒ **Select All** Choose **Select All** to select all the text in the Notepad workspace so you can copy it to the Clipboard.
- ⇒ **Time/Date** Choose **Time/Date** to insert the current time and date at the location of the insertion point.
- ⇒ **Word Wrap** Choose **Word Wrap** to wrap the text at the window border. You can resize the window to change where words are wrapped. Text fits into the new window size. When you print the text, words will break where they do on the screen.

Searching for Text in Documents

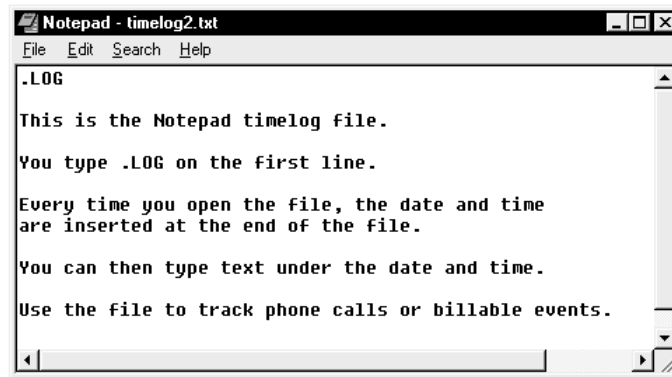
Open the Search menu to locate text in a document. Choose the Find option to start a new search. When you’ve found what you’re looking for, choose Find Next to resume searching for text again. Next time you choose the Find option, the text you specified in the previous search will still be in the Find what field, so all you have to do is click Find Next to do the search all over again.



Tip: Press F3 to choose the Find Next option

The Find dialog box is pictured here:

Creating a
time log in
Notepad
Figure 12-5.



Type the text you want to search for in the Find what field, then click the Match case button, if appropriate, and the Up or Down button in the Direction box to search backward or forward in a document. Click Find Next to locate the text in your document.

Notepad Time Log File

Notepad has a unique feature you can use to keep track of billable events and phone calls. You create an initial time log file, and whenever you open it, the date and time are inserted automatically at the end of the file. You can type a description of what the time log is for. For example, you could record a phone call or an appointment with a client.

To create a time log file, simply insert the text .LOG at the beginning of a new Notepad file, as shown in Figure 12-5. Be sure to press ENTER after the first line. Save the file under a name like TIMELOG.TXT. Close the file, then reopen it to see how the date and time are inserted. You can close

and reopen the file many times, and every time you do, a new date and time is inserted.

Phone Dialer: Dialing Phone Numbers Quickly

The Phone Dialer dials telephone numbers for voice telephone calls. After it is finished dialing, you pick up the receiver of the phone to complete the call. Phone Dialer is an example of a Microsoft Telephony application, which is discussed in Chapter 16. Phone Dialer is an interface between your computer and your telephone.

As shown in Figure 12-6, Phone Dialer can remember up to eight telephone numbers on its Speed dial pad. To dial a number, you can either click on a Speed dial button or type in a phone number in the Number to dial box.



Note: You must have a modem attached to your computer and a phone must be connected to your modem in order to use Phone Dialer. See Appendix C for instructions on attaching a modem to a computer.

Phone Dialer is one of the easiest Windows 95 utilities to learn and use because it works much like the phone systems already in use. You start the Phone Dialer by choosing it from the Accessories menu. When the utility opens, you can do one of the following:

- ⇒ Type a telephone number in the Number to dial field, or click the down-arrow button to choose a recently dialed number.
- ⇒ Enter a phone number by clicking on the number pad.
- ⇒ Click a button with a name on it in the Speed dial field to dial a number.
- ⇒ Click a blank button in the Speed dial field to create a new speed-dial entry for the button.

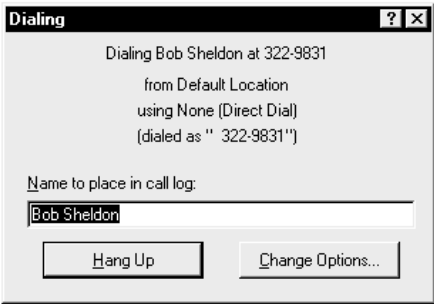
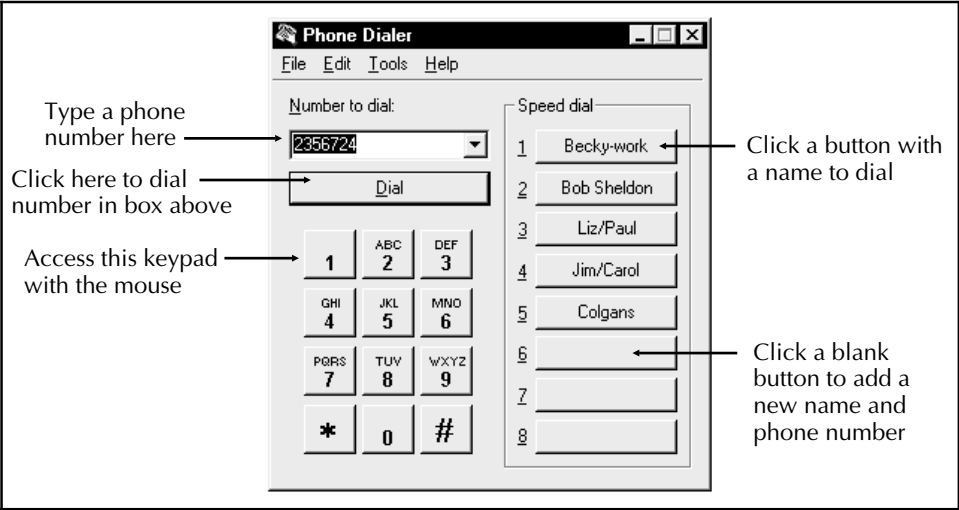


Note: When you close Phone Dialer, the changes you've made to Speed dial buttons are saved automatically.

The Dialing Procedure

When you click the Dial button or a Speed dial button, a dialog box similar to the following appears:

Phone Dialer
Figure 12-6.

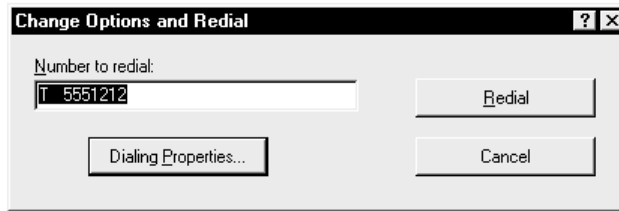


The number is dialed immediately, but you can click the Hang Up button to cancel the call, or click the Change Options button to make changes to the telephone number. If you let the call go through, the following dialog box appears:



Click Talk immediately. You'll hear a dial tone, and your call will proceed like a normal voice telephone call.

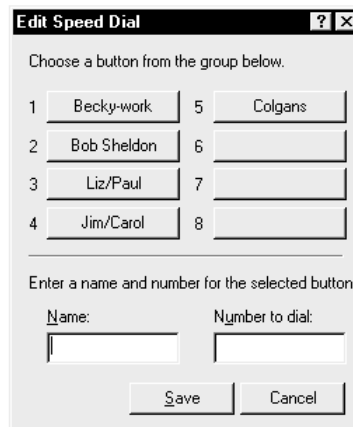
If you click the Change Options button on the Dialing dialog box, the following dialog box appears:



If you typed the number wrong, retype it in the Number to redial field, and click the Redial button. To change the way your telephone is dialed, click the Dialing Properties button, and then refer to “Dialing Properties” later in this section.

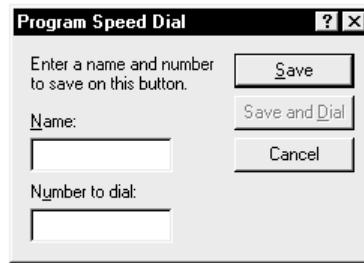
Creating and Editing Speed-Dial Entries

It's easy to create new speed-dial entries or change existing entries. To create a new entry, simply click one of the blank buttons in the Speed dial field. The following dialog box appears:



The Edit Speed Dial dialog box lets you change several names and phone numbers at once

Figure 12-7.



Type a name in the Name field, then tab to the Number to dial field and type in a telephone number. The name will appear on the button face. Click Save to exit the dialog box and make the new entry, or click Save and Dial to save the entry and dial the number now.

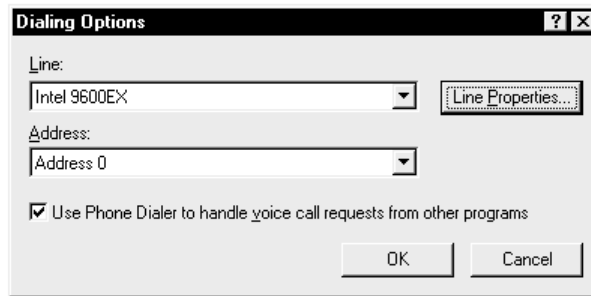


Tip: You don't need to type spaces or dashes in the Number to dial field.

To edit the names on Speed dial buttons or change the telephone numbers of the people whose names appear on buttons, right-click a button on the Speed dial field. The Change Options and Redial dialog box appears with the existing name and phone number. Simply make your changes and click Save. Another way to change names or edit phone numbers is to choose Speed Dial on the Edit menu. You'll see the dialog box shown in Figure 12-7. From here you can make changes to a number of buttons at the same time before saving.

Phone Dialer Settings

The Tools menu has several options for changing Phone Dialer settings. If you choose Connect Using, the following dialog box appears:

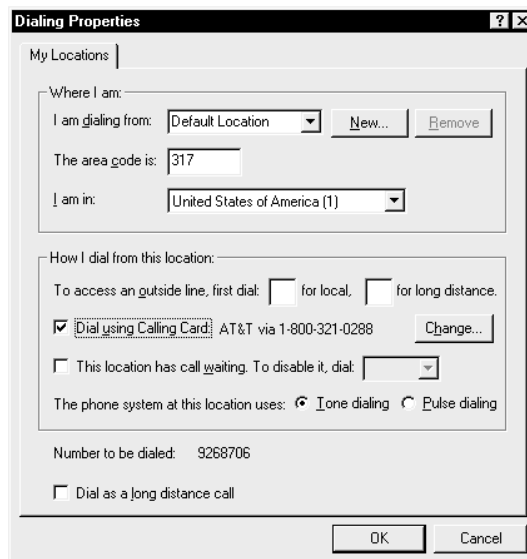


This is where you change the modem settings for the program. Refer to Appendix C for information on setting up modems and specifying line properties.

Dialing Properties

Choose Dialing Properties to change the way your phone is dialed. The dialog box shown in Figure 12-8 appears. The fields on this dialog box are described here:

- **Where I am** Change options in this field if you have moved your computer to another location. Portable computer users might need to change settings here. In the I am dialing from field, click the



Phone dialing properties for Phone Dialer
Figure 12-8.

down-arrow button to select a different location, or click the New button to create a new one. If you are creating a new location, fill out the two lower fields for the area code and location.

⇒ **How I dial from this location** Fill out the boxes in this field if an outside access code is required to make telephone calls from your current location. If you use a dialing card, click the Dial using Calling Card box, then click the Change button to enter the dialing card numbers. If the location has call waiting, type in the numbers required to disable it in the “To disable it, dial” field. See “The Dial Helper” in Chapter 16 for more on this feature.

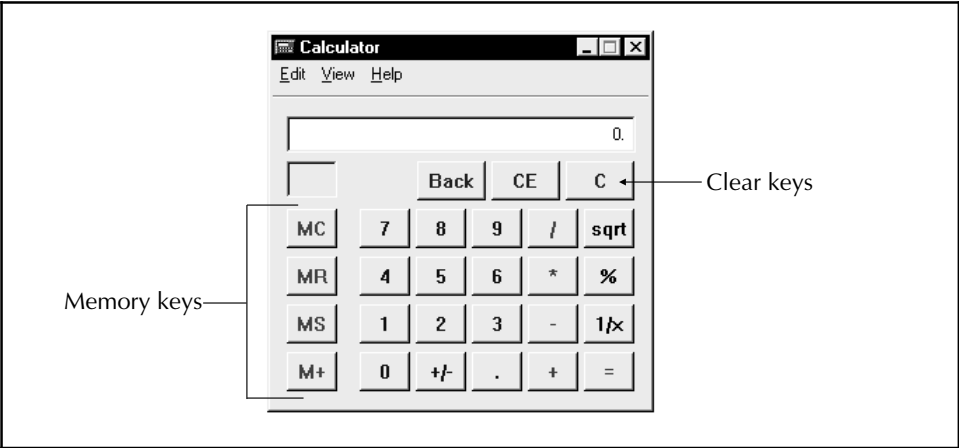
Keeping a Phone Log

Click the Show Log option on the Tools menu to open a dialog box similar to the following. It displays your most recent calls and calls you have received.

Call Log					
Edit Log Help					
To:	Bob Sheldon	932-8754	02/16/95	02:39PM	5 min
To:	Unknown	5551212	02/16/95	02:24PM	1 min
To:	Becky	2328448	02/16/95	01:26PM	57 min
To:	John Thomas	6780234	02/15/95	10:15AM	11 min

You can do a number of interesting things with the call log:

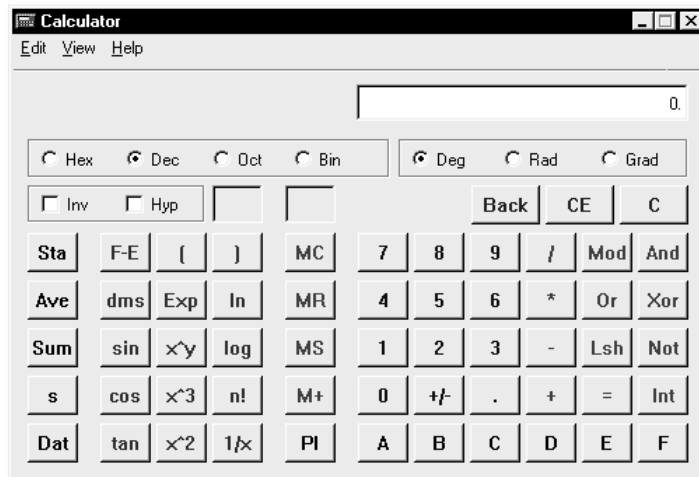
⇒ You can cut or copy calls, then paste them into your word processor for accounting or other documentation purposes. To do this, highlight the



The standard calculator
Figure 12-9.

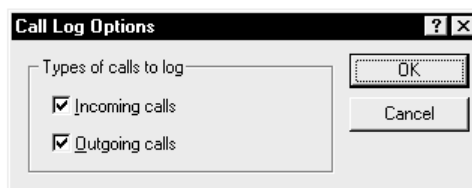
The scientific
calculator

Figure 12-10.



calls and choose Cut or Copy from the Edit menu. For example, when you're billing a client, you can cut or copy records of calls to an invoice to show the client how many calls you've made.

- ⇒ Click a call, then choose Dial from the Log menu to redial it.
- ⇒ Highlight one or more calls in the dialog box, then choose Delete from the Edit menu to delete entries and reduce the size of the list and the size of the file required to store it.
- ⇒ Choose Options from the Log menu to display the following dialog box. Choose one or both of the options, depending on the type of calls you want to log.



The Calculator

The Windows 95 Calculator works like both a standard calculator and a scientific desktop calculator. Use the standard calculator for simple arithmetic. It has a memory feature for storing and accumulating numbers.

Use the scientific calculator to perform number base conversions, statistical analyses, and trigonometric functions. I'm assuming that most readers already know how to use a calculator, so this section provides a basic overview of the Windows 95 Calculator features. It also offers tables that describe how each key works. You might want to photocopy these tables to keep by your computer for quick reference.

Load the Calculator by double-clicking its icon on the Accessories menu. When the Calculator appears, choose either Scientific or Standard from its View menu, depending on which calculator you want to work with. The standard calculator is shown in Figure 12-9; the scientific calculator is shown in Figure 12-10.



Tip: The Calculator's Edit menu provides copy and paste functions so you can paste numbers to the Calculator's display from another application, or copy results from the display to other applications.

12

Working with the Calculator

Calculation techniques, keyboard techniques, and use of the memory keys is the same for both the standard and scientific calculator. This section describes general techniques for using the Calculator.

Using the Keyboard to Enter Data

For quick data entry, sometimes it is easier to use the numeric keypad than it is to click Calculator buttons with the mouse. You can access most of the function keys from the keypad as well. For example, the basic operators (+, -, *, /, =) are available on the keypad.



Tip: To use the numeric keypad, make sure NUM LOCK is on.

Calculation Techniques

Calculations are performed in the normal way, by clicking numbers on the calculator keyboard with the mouse or by using the numeric keypad. For example, to add two numbers with the mouse method, follow these steps:

1. Click the first number.
2. Click the operator (+).
3. Click the second number.

Functions
Found on
Both the
Standard and
Scientific
Calculator
Table 12-1.

Button	Key	Function
++	+	Adds
-	-	Subtracts
*	*	Multiplies
/	/	Divides
M+	CTRL-P	Adds the display value to any value already in memory
MC	CTRL-C	Clears the value in memory
MR	CTRL-R	Recalls the value stored in memory (and retains the value in memory)
MS	CTRL-M	Stores the displayed value in memory
+/-	F9	Changes the sign of the displayed number
.	.	Inserts a decimal point in the displayed number
%	%	Calculates percentages
=	= <i>or</i> ENTER	Executes an operation
1/x	R	Calculates the reciprocal of the displayed number
Back	BACKSPACE	Deletes the rightmost digit
C	ESC	Clears the current calculation
CE	DEL	Clears the displayed number
sqrt	@	Calculates the square root of the displayed value

- Click the Equals button to view the results in the display.

Clearing the Calculator

To clear the Calculator's display and memory so you can start new calculations, do one of these steps:

- ⇒ To clear the Calculator's current entries, click on the C (Clear) button or press ESC.
- ⇒ To clear the number currently being entered without clearing previously entered numbers, click CE (Clear Entry) or press DEL.
- ⇒ To remove the most recently typed digit, click the Back button on the Calculator or press BACKSPACE on the keyboard.

Operators on
the Scientific
Calculator
Table 12-2.

Button	Key	Function
((Starts a new level of parentheses. The current level appears below the display. The maximum number of levels is 25.
))	Closes the current level of parentheses.
And	&	Calculates bitwise AND.
Int	;	Displays the integer portion of a decimal value. Inv+Int displays the fractional portion of a decimal value.
Lsh	<	Shifts left. Inv+Lsh shifts right.
Mod	%	Displays the <i>modulus</i> , or remainder , of x/y.
Not	~	Calculates bitwise inversely.
Or		Calculates bitwise OR.
Xor	^	Calculates bitwise exclusive OR.

Using the Memory Buttons

Use the Calculator’s memory buttons to store numbers for later use or to accumulate totals. New values placed in memory either replace the old values, add to the old values, or subtract from the old values. The memory buttons are as follows:

- ⇒ **Memory Store (MS)** The MS button puts the value in the Calculator’s display into memory. If a value is already in memory, it is replaced by the new value.
- ⇒ **M+** The M+ button adds the value in the Calculator’s display to the value in memory and stores the sum in memory.
- ⇒ **Memory Recall (MR)** The MR button displays the contents of

Number Base
Functions on
the Scientific
Calculator
Table 12-3.

Button	Key	Function
Bin	F8	Converts to the binary numbering system.
Byte	F4	Displays the lower eight bits of the current number.
Dec	F6	Converts to the decimal numbering system.
Dword	F2	Displays the full 32-bit representation of the current number.
Hex	F5	Converts to the hexadecimal numbering system.
Oct	F7	Converts to the octal numbering system.
Word	F3	Displays the lower sixteen bits of the current number.

Statistical
Functions on
the Scientific
Calculator
Table 12-4.

Button	Key	Function
Ave	CTRL-A	Calculates the mean of the values displayed in the Statistics box. Inv+Ave calculates the mean of the squares.
Dat	INS	Enters the displayed number in the Statistics box.
s	CTRL-D	Calculates the standard deviation with the population parameter as n-1. Inv+s calculates the standard deviation with the population parameter as n.
Sta	CTRL-S	Activates the Statistics box and the Ave, Sum, s, and Dat buttons.
Sum	CTRL-T	Calculates the sum of values in the Statistics box. Inv+Sum calculates the sum of the squares.

memory.

⇒ **Memory Clear (MC)** The MC button clears memory.

Functions Found on Both Calculators

Functions found on both the standard and scientific calculator are shown in

Button	Key	Function
cos	O	Calculates the cosine of the displayed number. Inv+cos calculates the arc cosine. Hyp+cos calculates the hyperbolic cosine. Inv+Hyp+cos calculates the hyperbolic arc cosine.
Deg	F2	Sets trigonometric input for degrees. This function is available in degrees only.
dms	M	Converts the displayed number to degree-minute-second format. Calculator assumes the displayed number is in decimal format. Inv+dms converts the displayed number to decimal format. Calculator assumes the displayed number is in degree-minute-second format.
Exp	X	Allows entry of scientific notation numbers. The exponent has an upper limit of +307. You can continue to enter numbers as long as you do not use keys other than 0-9. Exp can only be used with the decimal numbering system.

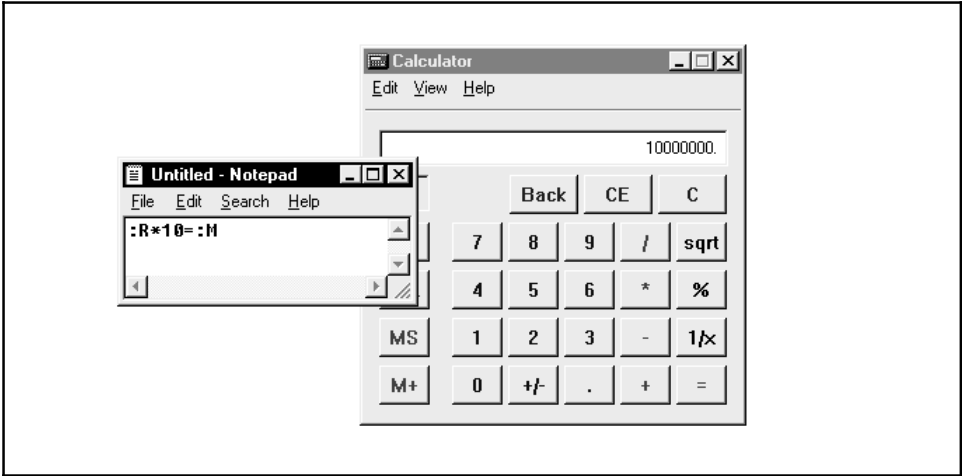
Other
Functions on
the Scientific
Calculator
Table 12-5.

Button	Key	Function
F-E	V	Toggles scientific notation on and off. Numbers bigger than 10 ¹⁵ are always displayed exponentially. F-E can only be used with the decimal numbering system.
Grad	F4	Sets trigonometric input for gradients when the Calculator is in decimal mode.
Hyp	H	Sets the hyperbolic function for sin, cos, and tan. The different functions automatically turn off the hyperbolic function after a calculation is completed.
Inv	I	Sets the inverse function for sin, cos, tan, PI, x ^y , x ² , x ³ , In, log, Ave, Sum, and s. The different functions automatically turn off the inverse function after a calculation is completed.
In	N	Calculates natural (base e) logarithm. Inv+In calculates e raised to the x0th power, where x is the current number.
log	L	Calculates common (base 10) logarithm. Inv+log calculates 10 raised to the x0th power.
n!	!	Calculates the factorial of the displayed number.
PI	P	Displays the value of PI (3.1415...). Inv+PI displays 2 * PI (6.28...).
Rad	F3	Sets trigonometric input for radians, when in decimal mode. Input can be from 0-2*PI.
sin	S	Calculates the sine of the displayed number. Inv+sin calculates the arcsine. Hyp+sin calculates the hyperbolic cosine. Inv+Hyp+sin calculates the hyperbolic arcsine.
tan	T	Calculates the tangent of the displayed number. Inv+tan calculates the arctangent. Hyp+tan calculates the hyperbolic tangent. Inv+Hyp+tan calculates the hyperbolic arctangent.
x^y	Y	Computes x raised to the yth power. Inv+x ^y calculates the yth root of x.
x²	@	Squares the displayed number. Inv+x ² calculates the square root.
x³	#	Cubes the displayed number. Inv+x ³ calculates the cube root.

Other Functions on the Scientific Calculator
(continued)
Table 12-5.

Paste Characters	Function
:	If placed before a number from 1 to 12, a function key is simulated; for example, 1 becomes F1.
:C	Equivalent to clicking the MC (Memory Clear) button and clearing memory.
:E	If you're in decimal mode, :E allows entry of numbers in scientific notation. Can be followed by + or - to indicate the sign of the exponent.
:M	Equivalent to clicking the MS (Memory Store) button, which puts the value in the Calculator's display into memory.
:P	Equivalent to clicking the M+ button, which adds the currently displayed value to memory.
:Q	Clears the display. Equivalent to clicking the C button.
:R	Equivalent to clicking the MR (Memory Recall) button, which displays the contents of memory.
\	Same as clicking the Dat button on the scientific calculator, which enters the displayed number in the Statistics box.

Paste Characters and Their Function
Table 12-6.



Creating scripts in Notepad for use in the Calculator
Figure 12-11.

Table 12-1.



Tip: The square root button is missing in the scientific calculator. You can calculate the square root by raising a number to the power of 1/2 by using the x-to-power-of-y (x^y) key. Type in the value of x, click the x^y key, and then type in **.5** and press **ENTER**

Scientific Calculator Functions

The Tables 12-2 through 12-5 explain the advanced functions found on the scientific calculator. You can either click on the calculator button with the mouse or press the key(s) listed in the Key column.

12

Scripts for the Calculator

The Calculator's Edit menu has options for copying and pasting from the Clipboard. Using the Copy option, you can copy a result from the Calculator's display to another application. Use the Paste option to paste a number from another application.

When pasted from the Clipboard, the paste characters listed in Table 12-6 are interpreted as key sequences, or function keys. You can use these characters in scripts. A *script* is a line of text that the Calculator interprets as a command. Create scripts with the Notepad or another text-based application.

In Figure 12-11, the Notepad accessory appears on the desktop next to the Calculator. Here a script is being created in Notepad.

Scripts can be copied from Notepad to the Clipboard, then pasted to the Calculator. In Figure 12-11, the script multiplies the contents of memory by 10, and displays the result each time the script is pasted. The script shown in Notepad uses :R to recall memory, which is multiplied by 10; :M is then used to store the new value back in memory, and the result remains in the Calculator's display. Note that 100 was initially stored in memory and that the display shows the results after several iterations (of pasting the script, which you can do by pressing **CTRL-V).**

Of course, you can create more complicated scripts and even create a whole Notepad file of the scripts you use on a regular basis. Type each script on a separate line so you can easily select

and copy it to the Clipboard. For clarity, precede each script with a descriptive name. When using scripts, keep in mind that variables are stored in the Calculator's memory.

Number Base Conversions on the Scientific Calculator

You can switch the scientific calculator from its default base-10 number system to binary, octal, or hexadecimal by clicking one of these buttons:

- ⇒ Hex (hexadecimal)
- ⇒ Dec (decimal)
- ⇒ Oct (octal)
- ⇒ Bin (binary)

To convert a number from one number base to another, click the button of the starting number base (click Dec, for decimal, for example). Type the value to be converted, and then click the button of the target number base. The number is converted. Select a unit of measurement for displaying the results. When converting to hexadecimal, octal, or binary numbers, click Dword to display the full 32-bit representation of the number, click Word to display the 16-bit representation of the number, or click Byte to display the 8-bit representation of the number.



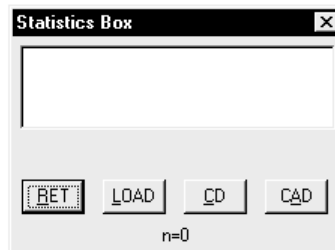
Note: Use the A through F buttons on the scientific calculator to enter hexadecimal numbers 10 through 15.

Statistical Functions on the Scientific Calculator

The scientific calculator can perform averaging and standard deviations. Values are entered in a special Statistics box that appears when the Sta button is pressed. The Statistics box can be moved onto the desktop, where you can then enter a list of numbers, or data points. To see how this works, follow these steps:

1. Switch to the scientific calculator if it is not already in use by choosing Scientific from the View menu.

2. Click the **Sta** button to display the Statistics box, as shown here:



3. Move the Statistics window to the side, and then click on the Calculator and start typing numbers such as 100, 200, 300, and so on. Click the **Dat** button or pressing the **INS** key after each number to insert it into the Statistics box.
4. Click the **Ave** (average), **Sum**, or **s** (standard deviation) button to display statistical results for the numbers in the Statistics box.

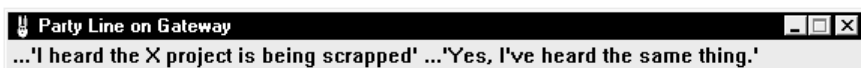
12

The buttons on the Statistics box are used as follows:

- ⇒ **RET** Moves you to the main calculator so you can type numbers.
- ⇒ **LOAD** Copies the highlighted number in the Statistics box to the calculator's display.
- ⇒ **CD** Deletes the currently selected number in the Statistics box.
- ⇒ **CAD** Deletes all numbers in the Statistics box.

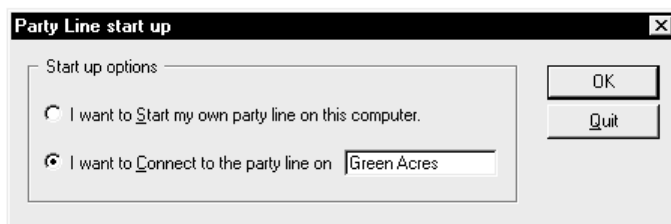
Party Line: Trading Gossip and Spreading Rumors

Party Line is located in the Games folder, but it's not exactly a game. Instead, it is a fun way to communicate with co-workers if your computer is connected to a network. You or anyone else can start a party line, and anyone on the network can join in. The "conversation" scrolls across the Party Line window, which appears at the top of the screen, as shown here:



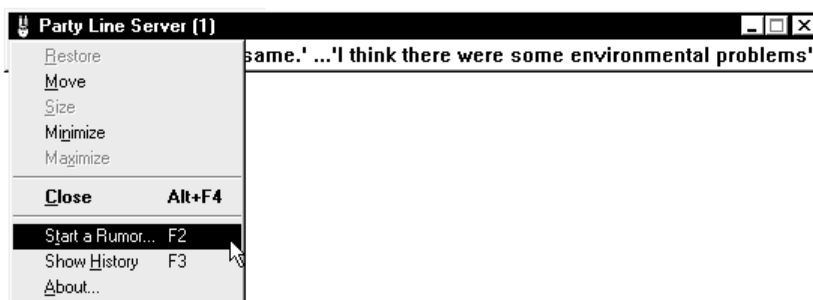
Microsoft originally called the program “Rumor,” which gives you an idea of what conversations on the Party Line might be like.

To start Party Line, click Start, then Programs, then Accessories, then Games, and choose Party Line. The following dialog box appears:

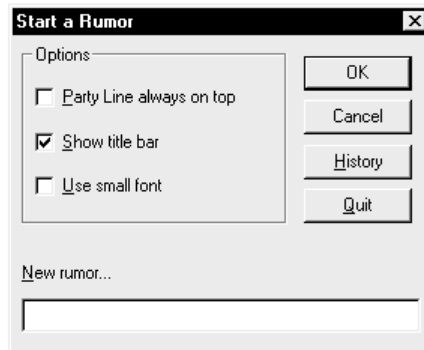


You can start your own rumors or comment on rumors started by others. To connect with an existing party line, click the “I want to Connect to the party line on” button, type two backslashes (\), and type the name of the computer that is hosting the party line. For example, to connect with a party line on a computer called Gateway, you would type **\\Gateway** in the field. When you connect with an existing party line, the Party Line title bar appears at the top of your window. The text of the latest comments scroll across the window.

If you’ve already started Party Line, click the rabbit in the upper-left corner of the Party Line window to display the following menu:



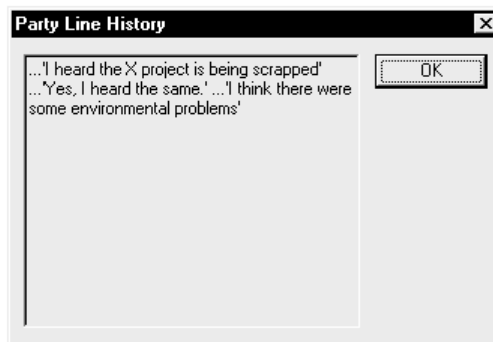
Choose Start a Rumor from the menu to display the following dialog box. From here you can type a new rumor in the New Rumor field, or change the Party Line settings.



Note: Party Line gossips are relatively anonymous. Only the originating computer is known to anyone who joins a Party Line already in progress.

Party Line settings include the option of always displaying the party line window on top of other open windows. You can also turn the Show title bar off so only the Party Line text is displayed, or use a small font so you can see more text in the Party Line window.

To see the history of a Party Line, Choose Show History (or press F3) on the Party Line menu. You'll see a dialog box similar to the following:



You can also click the History button on the Start a Party Line dialog box to see the Party Line History box. Open this dialog box if you get in on a Party Line late and need to catch up on the gossip that's already been spread.

I'm not your boss. I want you to have fun with your computer. Go ahead. Play some games. Playing games is a great way for new users to get familiar with clicking the mouse and the general concepts of working with Windows 95. This chapter provides a quick overview of rules and strategies for playing the games that come with Windows 95. The games are:

- ⇒ **Solitaire** The popular single-player card game.
- ⇒ **FreeCell** A logic puzzle in the form of a solitaire card game.
- ⇒ **Minesweeper** A logic game that will keep you guessing or blow you up.
- ⇒ **Hearts** A four-player card game that you can play over a network or play with your computer.
- ⇒ **Party Line** This is the “Rumor Central” program for Windows 95 network users. You can start a conversation that other people on your network can participate in. Chapter 12 discusses Party Line.

You can make an accessory—even a game—easier to start by creating a shortcut for it on the desktop. Right-click the desktop, then choose New and Shortcut as described in “Using the Shortcut Wizard” in Chapter 6. When the Create Shortcut dialog box appears, type the name of the accessory you want to create a shortcut for. Here's a list of names for the accessories discussed in this chapter. Just type the computer program name listed on the right in the Create Shortcut dialog box.

Solitaire	SOL.EXE
FreeCell	FREECCELL.EXE
Hearts	MSHEARTS.EXE
Minesweeper	WINMINE.EXE
Party Line	RUMOR.EXE

Solitaire

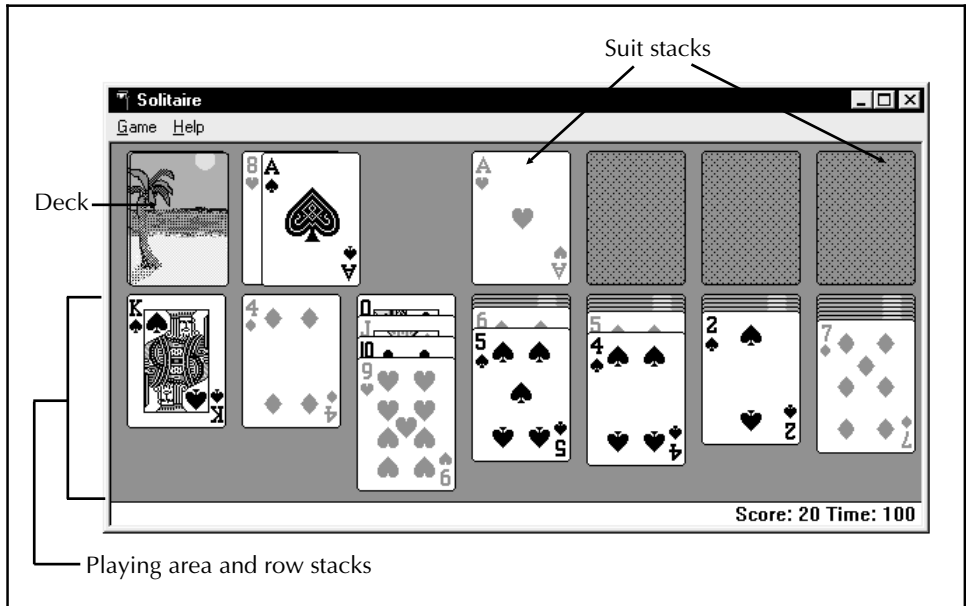
Solitaire is a computerized version of the popular single-player card game (the game is called “patience” in England). The object of the game is to stack cards of the same suit into four piles. The stacks must be in ascending order, starting with the ace and ending with the king. You lose the game if you can't make any more plays to complete the suit stacks.

The Solitaire window is shown in Figure 13-1. It has three areas:

- ⇒ The *deck* in the upper left contains all the cards that remain after the row stacks have been dealt. You draw cards from the deck and play them on the row stacks or the suit stacks.
- ⇒ The *row stacks* consist of a row of seven stacks of cards. At the start of the game, the number of cards in each stack increases from one on the left to seven on the right. The top card in each row stack is face up. Underlying cards are face down.
- ⇒ The four *suit stacks* in the upper right hold cards that have been moved out of the row stacks in the playing area.



Tip: Choose Deck on the Game menu to select a different card design. Be on the look out for interesting animation sequences. For example, look for the moving robot meters, the “sleight of hand,” and the “smiling” sun on the backs of the cards.



The Solitaire window with a game in progress
Figure 13-1.

Playing Solitaire

In Solitaire, the objective is to uncover the cards that are face down in the row stacks and in the deck, and play them into the suit stacks. To play a card, click and drag it to a row stack or to a suit stack—wherever you can make a legal move.



Tip: If a card will play on a suit stack, just double-click it. Solitaire knows where the card goes and automatically moves it there.

When you move the top card from a stack, you can turn over the card under it and play it, too, if possible.

You can move cards from one row stack to another, but only in descending order and only on a card of an alternate color. For example, you can move a black eight (a spade or club) onto a red nine (a heart or diamond). After moving a card, uncover the card under it. Solitaire won't let you make illegal moves. A card moved illegally bounces back to its original location. After making all the moves in the playing area, you can begin drawing cards off of the deck.



Tip: The standard method is to draw three cards at a time, but you can draw one card at a time instead, which makes the game easier to win. To change the draw, choose an option on the Solitaire Options menu.

Click the deck with the mouse to expose the first three-card draw (or one-card draw if you're playing that way). Play the top card in the draw if possible, then the next if possible. You get to see all the cards in the draw, so if you're into strategy, you can keep track of underlying cards and play cards to expose the cards on future draws. Such a strategy is discussed later.

After making all the possible plays in a draw, click the deck again for another three-card draw. Be sure to look for plays on the row stacks as you add cards from the deck. For example, in Figure 13-1, the five of spades was just moved down from the deck to the fourth row. This exposes the ace of spades, which can be played to the suit stack and also lets you play the four of diamonds in the second row on the five of spades in the fourth row.

Empty rows appear when all the cards in the stack have been moved elsewhere. You can then place a king in the empty position to start a new stack. Playing the four of diamonds elsewhere in the above example opens up its row so you play the first available king in it.



Note: You can move an entire set of cards in a row stack from one row to another. As described above, you move the six and the five to another row to expose the hidden card underneath.

Once you've exhausted the cards in the deck, click it to play through the deck again. The cards are not reshuffled, so if you didn't play any cards in the first three-card draw, the same cards are exposed again. However, if you did play a card, the top card in each three-card draw is different, since the order of the draw shifts. It's possible to expose every card in a deck, depending on which cards you play. This is an important thing to keep in mind for strategy, because it's sometimes useful *not* to play a card in order to expose a more important card the next time through the deck.



Tip: Choose Undo from the Game menu to undo your last move.

You win the game when all the cards are stacked in the suit stacks. You lose when you can't make any more plays from the deck or move cards from one stack to another to expose other cards. If you think you've lost the game, do one last check for overlooked plays. Look for groups of cards in the row stacks that you can move from one stack to another.

In some cases, you can move part of a row stack to another stack to free up a card you need to move to the suit stack. Alternatively, you might be able to play a card from the suit stack back into a row stack to make a move possible, but this is usually only the case if one of the suit stacks has cards of higher value.

To start a new game, choose Deal from the Game menu.

Winning Strategies for Solitaire

Solitaire is hard to win if you just play the cards as they are dealt from the deck. To increase your chances of winning, try a little strategy. For example, if you have a choice to move a card from two different row stacks, move the card from the right-most stack since it has the most unexposed cards underneath it. It's best to whittle down the large stacks first.

Also consider *not* playing cards drawn from the deck. Initially, there are eight three-card draws in a deck. Suppose you only play one card in the first draw. This shifts the draw order so that the next time through the deck, what was the second card in each draw is now the top card. Before playing any cards

that would “shift” the order of the draw, go through the deck at least once to see what cards are the most important to play. Look for three-card draws where you can play all three of the cards. This gets cards out of the deck but doesn’t change the draw order. You can also play any cards in the last draw, since doing so doesn’t affect the draw order.

If you decide to play this strategy and want to fully exploit it, play cards by exposing cards in the draw deck that will help you win. For example, suppose you want to play the second card in the third draw. The first and the second draw both have a single play. In this case, you would play only one card in either the first or second draw. That way, the next time through the deck, the second card in the third draw is exposed.

Of course, if you’re playing against the clock, this strategy doesn’t really do you much good unless you’re really fast. Also, some consider the technique cheating. In my opinion, this strategy adds a whole dimension of skill and fun to the game—much more than just taking the cards as they come off the deck.

The Solitaire Options Menu

You can change Solitaire’s settings by choosing Options on the Game menu. The Options dialog box appears:



This dialog box offers the following options:

- ⇒ **Draw One** Choose this option to draw one card at a time from the deck instead of three. This will improve your chances of winning, but is not considered “true” Solitaire.
- ⇒ **Draw Three** Enables three-card draws.
- ⇒ **Scoring** The scoring options are Standard, Vegas, or None. A complete breakdown of scoring techniques is listed under “Scoring” in the

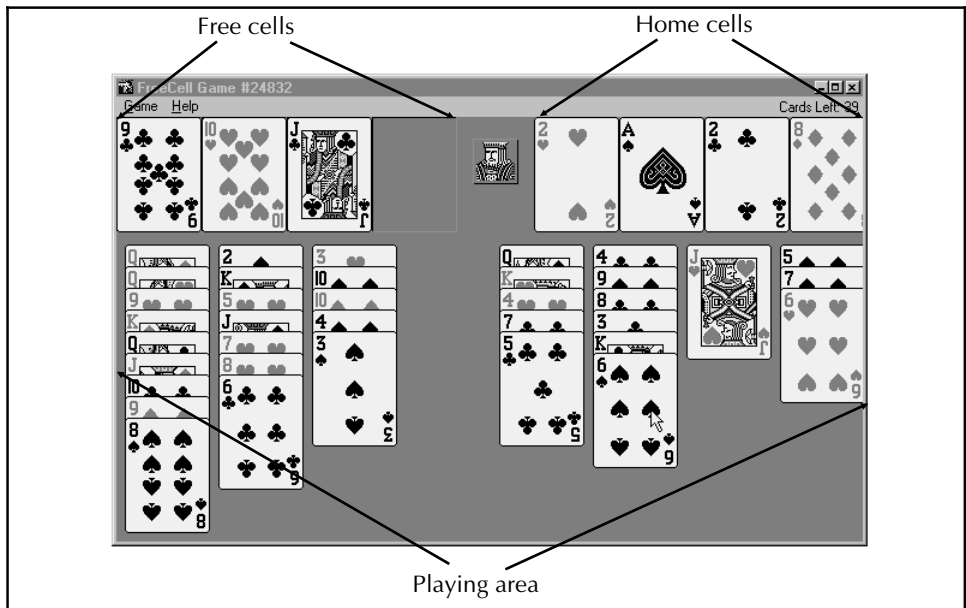
Solitaire help facility. If you select Vegas scoring, you can click the Keep score checkbox.

- ⇒ **Timed game** Enable this option to time the length of your games. The time appears in the status bar at the lower left of the Solitaire window.
- ⇒ **Status bar** Enable this option if you want to see the status bar and its messages.
- ⇒ **Outline dragging** When this option is enabled, an outline appears as cards are moved. As you drag over cards in the suit stack, Solitaire indicates valid moves by highlighting the underlying suit stack. Disable this option for better performance on slow computers.

FreeCell

FreeCell is a single-player card game like Solitaire, except that all the cards are dealt face-up. You try to move randomly dealt cards in the playing area to home cells by using the free cell area to temporarily hold cards. Cards on home cells must be stacked by suit and rank, starting with the ace. You win the game if you get all the cards from the playing area onto the home cells. Figure 13-2 shows a FreeCell game in progress.

13



A FreeCell game in progress

Figure 13-2.

Here are some important points about FreeCell:

- ⇒ All the cards are initially dealt face-up, unlike Solitaire, in which cards are hidden.
- ⇒ Since you can see all the cards, gamers believe that every game is winnable. Of course, this depends on the strategy you apply. Also, since the cards are face up and are dealt only once, you can't rely on good luck to change your fortune after the initial shuffle.
- ⇒ During play, you can play red cards on black cards and black cards on red cards.
- ⇒ The four free cells in the upper left serve as temporary placeholders. You can place cards in the free cells, then replay them in the playing area.
- ⇒ You can play kings on blank spaces that you open up in the playing area.
- ⇒ Play cards in the home cells, starting with the ace.

Playing FreeCell

To start FreeCell, open the start menu, choose Accessories, then choose Games, and finally select FreeCell. You can also create a shortcut on the desktop for FreeCell by following the procedures at the beginning of this chapter. Once the FreeCell window is open, choose New Game on the Game menu, or press F2. A new game starts and the cards are dealt randomly in the playing area. Instead of playing a random game every time you start FreeCell, you can choose Select Game from the Game menu to play a game that is dealt the same way every time you start it. The following dialog box appears. At this point you enter the number, between 1 and 32000, of the game you want to play.



Use the Select Game option when you are determined to beat the game. With this option, you can work on a strategy that involves the same card layout until you win. Be sure to jot down the number of the games you want to beat.

During play, you can move cards, reveal partially hidden cards, move a stack of cards, and quickly advance cards to home cells, as explained below. You can move a card to other columns in the playing area only if the card is lower-ranked and of the opposite color as the top card in the column. For example, you can move a black seven to a red eight.

- ⇒ Click the card you want to move, then click a card stack or free cell where you want to move the card.
- ⇒ To cancel a move, click the card again.
- ⇒ Double-click a card to quickly move it to a free cell (or to a suit stack if such a move is available).
- ⇒ To move a stack of cards to a blank column, click the bottom card in the stack to move, then click the column where you want to move it.
- ⇒ If you can't make out the suit of an underlying card, right-click it.

FreeCell automatically transfers unneeded cards to home cells after some moves. Don't worry. You won't need those cards in the playing area any longer. FreeCell determines which cards are unneeded if a lower-ranked card of the opposite color is no longer available.



Note: FreeCell warns you when there is only one legal move left by making the game's title bar flash. Choose your move wisely at this point.

FreeCell determines automatically if no more legal moves are left and ends the game accordingly. You'll see the message "There are no more legal moves" and be prompted to start another game. If you want to play the same game again, choose Restart Game from the Game menu. Or, if you want to play the same game again at a later time, write the game's number down. When you're ready to replay it, choose Select Game from the Game menu and enter the number.

Winning Strategies in FreeCell

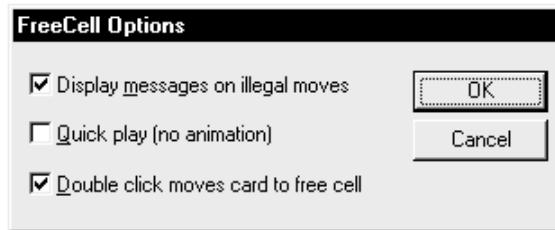
One of the most important strategies in FreeCell is to study the cards and attempt to get the aces and lowest cards out first. Work on the stacks that have these low cards first, if possible, but be careful not to make unnecessary moves just because a card is playable elsewhere. You can "lock up" the game by moving cards to unnecessary positions or playing too many cards in the free cells.

Try to keep free cells open for important plays. A common mistake early in the game is to move four cards to the free cell area to free up an ace or other low card. But if you do that, you may not be able to play the cards in the free cell area back to the playing area, which severely restricts card movement. The game soon ends if you get stuck in this trap.

Game Options in FreeCell

The Game menu offers commands for showing statistics and changing the features of FreeCell:

- ⇒ Choose Statistics to show wins, losses, and streaks.
- ⇒ Choose Options to display the FreeCell Options dialog box you see here:



Click the first option if you are a beginner and you want to see messages every time you make an illegal move. To remove the animation sequences that appear when you move cards and get better performance, disable the second option. Click the last option if you want to be able to double-click cards to move them to free cells.

Minesweeper

Minesweeper is a strategy game in which you must find hidden mines without being blown up. The Minesweeper playing board is shown in Figure 13-3. In the figure, a game is in progress.

Playing Minesweeper

The board consists of a mine field, a timer, and an indicator that lists how many mines remain in the mine field. You locate mines by “stepping” on squares. If you step on a mine, you’re blown up and the game is over. The game is part guesswork and part strategy. Your first few moves are guesses. If you don’t get blown up right away, you see reports in the safe squares you’ve stepped on telling how many mines are in nearby squares. Your job is to

Minesweeper,
with a game
in progress
Figure 13-3.

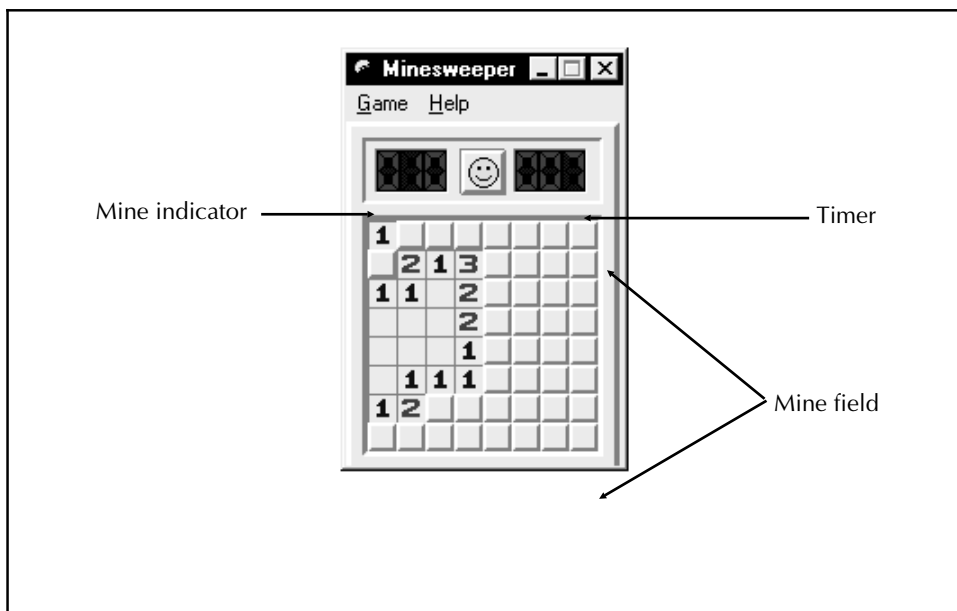
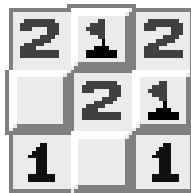


figure out which surrounding squares hold the mines and which squares are safe. The job gets easier as you discover more safe squares.

When you suspect that a square holds a mine, mark it with a flag by right-clicking it. As you mark mines, the indicator at the upper-left corner of the mine field counts down. Two mines are marked with flags in this illustration:

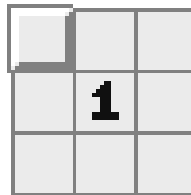


When you click on a safe square that is not next to a mine, all the squares around the safe square are uncovered and reveal either a blank space or a number. If you're lucky, some of the newly uncovered squares are not next to mines either, and the squares around them are uncovered as well. If you click on a safe square and no adjacent squares are uncovered, it means you've clicked next to a square with a mine.

But click on just a square with a mine and the game ends. When you win, you can enter your name in the championship roster if yours is the best score with the fastest time. Click the New option on the Game menu or click the smiley face to start a new game. You can choose among different skill levels. When you choose the Intermediate or Expert skill level, you get a mine field board with more squares. Choose Custom if you want to define the number of squares on the mine field yourself.

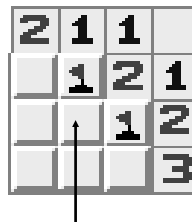
Winning Strategies for Minesweeper

To locate mines, analyze the numbers that appear in uncovered squares. In the following example, the covered square in the upper-left corner must contain a mine, because the center square tells you that only one mine borders it and the other squares are already uncovered.



Tip: Your best strategy is to first locate any squares containing a 1 that are bordered by a single uncovered square, and then mark those squares as having mines. Then you can start working the area around marked squares.

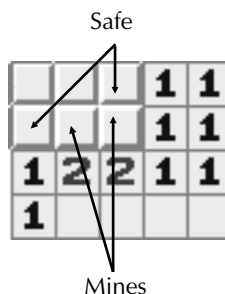
In the next illustration, the covered square marked with the arrow does not contain a mine if you are correct that the two flagged squares contain mines:



If flags are correct, this square is safe

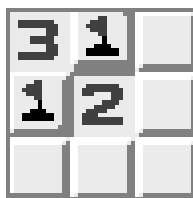
In this case, you could go ahead and click the safe square, but keep in mind that you might be wrong about the squares you've flagged as having mines.

In the next illustration, you can tell that mines are under two of the squares with arrows:



The right square marked 2 is bordered by two uncovered squares, which therefore must contain mines. In addition, the two squares marked as safe cannot contain mines because the 1 squares next to them must be detecting the same mines. In this game, you could click the safe squares with the left mouse button.

The last illustration demonstrates a mouse technique known as “clearing around the square.” Notice that the two mines adjacent to the center square are already flagged:



The remaining squares must be safe. To uncover them, hold down both mouse buttons and click the center square.

Hearts

Hearts is a game of luck and skill that you can play over the network with other users. In Hearts, sound strategy can often overcome a bad draw of the cards. Hearts is a four-player game, but the computer can take the place of some of the players. In Hearts, unlike most other computer games, each player can sit at a different computer.

One player is the dealer. Whoever starts the game becomes the dealer, and the computer takes over the hands of users who drop out of the game. If the dealer drops out, however, the game ends.

Playing Hearts

The object of Hearts is to score as few points as possible. You want to avoid getting hearts and the queen of spades in your hand since you are penalized one point for each heart card and 13 points for the queen of spades. The game is over when one player reaches 100 points. The winner is the player with the fewest points.

The cards are ranked with the two as the low card and the ace as the high card. The card's ranking determines who wins tricks. A *trick* comprises four cards, with each player playing a single card in a clockwise rotation. The *lead* is the first card played in a trick. The player who lays down the highest ranked card of the lead suit "wins" the trick. A trick with a heart in it costs the person who "won" the trick one point. If the queen of spades is in the trick, the person who won the trick gets 13 points.

The holder of the two of clubs starts the game by laying that card on the table. Each person must *follow the suit* of the lead card. In the first hand, everybody lays down a club, but if you don't have a club, you *play off* by laying down a card of any other suit. You play off cards in other hands as well if you can't follow the suit of the lead card.

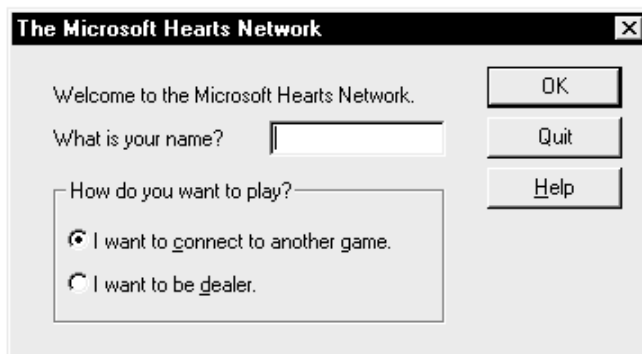


Note: You cannot play a heart or the queen of spades in the first trick.

You can't *lead with* a heart at the start of a game—that is, you can't lay a heart on the table as the first card in a suit. "Hearts are broken" the first time a player plays a heart, because from that point on, any player can lead with a heart. This rule prevents players from getting rid of hearts right away if they can't play cards that match the lead card's suit.

At the end of the game, you are penalized one point for each heart suit card and 13 points if you hold the queen of spades. One exception is when you attempt to *shoot the moon*. To successfully shoot the moon, you must collect all the hearts and the queen of spades during a hand. If you are successful, then every other player is penalized 26 points while you collect zero points. The game is over when one player reaches 100 points. The winner is the player with the fewest points.

When you start Hearts, the following dialog box appears. Type in your name, then click one of the button options, depending on whether you want to connect with an existing game or start your own game as the dealer. Hearts will find existing games being played on your immediate network.



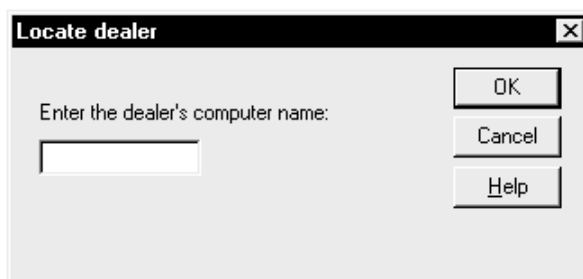
If you want to start a new game or just play by yourself, click the "I want to be dealer" option. If you become the dealer, you can wait for other users to join. Once other users have joined, or if you just want to play by yourself, press F2. The computer takes the part of missing players.



Tip: You can improve game performance when other users are playing over the network by making the user with the fastest computer the dealer.

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Click the "I want to connect to another game" checkbox to attach to another dealer's computer. Enter the dealer's computer name in the Locate dealer dialog box:



Type in a path name for the dealer's computer in the form **\\computername**. For example, if the dealer's computer name is **"John's PC"**, you would type **\\John's PC**. When all the players have joined, the dealer starts the game by pressing F2.

Playing the Game

After four players have been found, you see your hand shown face-up at the bottom of the table. It is sorted by suit, as shown in Figure 13-4. Of course, each person sees his or her own hand and none other.

The game begins by passing cards. A version called Greek Hearts requires each player to pass three cards prior to playing each hand. Hearts for Windows uses a variation of Greek Hearts. Cards are passed in this order:

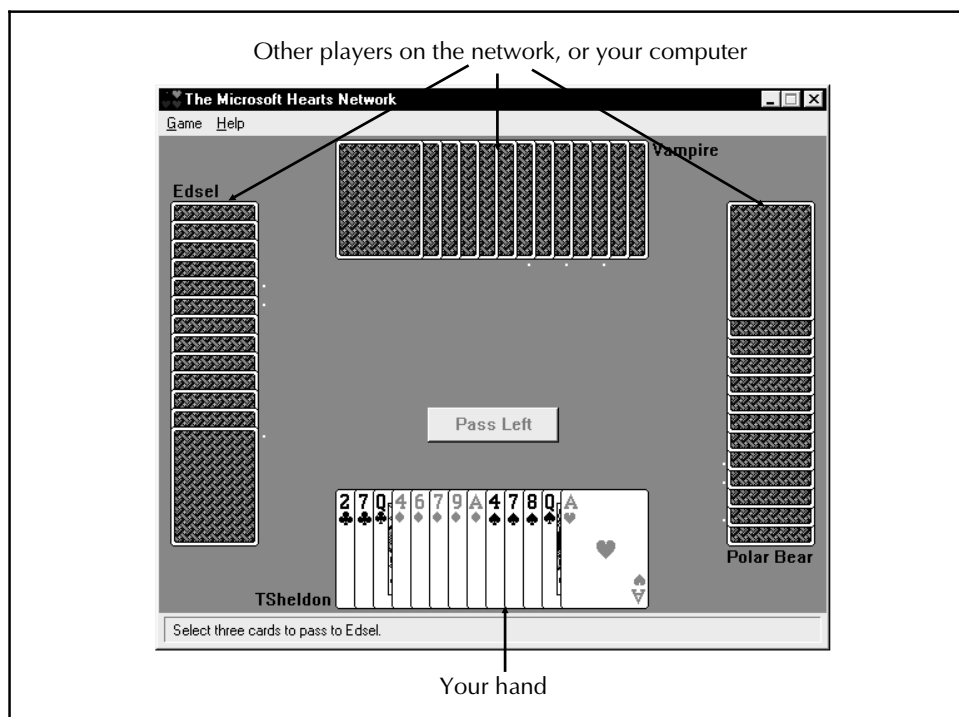
- The first hand passes three cards to the opponent on your left.
- The second hand passes three cards to the opponent on your right.
- The third hand passes three cards to the opponent across from you.
- The fourth hand does not pass cards.

On the next go-round, everybody shifts places, and the cycle begins over again starting with the fifth trick.

Click the three cards that you want to pass to your opponent. When you click a card, it is raised slightly from your hand. If you decide you don't want

The Hearts game, showing the local hand and the hands of other players

Figure 13-4.



to pass a card you picked, click the card again to lower the card back into your hand. Click the Pass button—Pass Left, Pass Right, or Pass Across—after you have selected three cards. You will receive three cards from one of your opponents.



Tip: Pass three cards in your hand that you think are likely to make your opponents win tricks and thus accumulate points. Pass the queen of spades, high hearts, and high cards of any suit. Keep spades lower than the queen, but if you have a lot of spades, get rid of the highest cards first.

Keep spades lower than the queen of spades to protect yourself from being forced to play the queen of spades if someone else leads spades. If someone leads spades and the queen is all you have, you must play the queen and subsequently win the trick. That costs 13 points.

Winning Hearts Strategies

Never lead out the king or ace of spades unless the queen of spades has already been played in a previous trick. Lead with low cards and play off with the queen of spades, hearts, and high cards. However, if you are trying to shoot the moon, you want to lead with high cards in order to collect all of the tricks. Be on the lookout for other players attempting to shoot the moon. You may need to sacrifice a trick to stop them.

The last person to play a trick has a distinct advantage over the other three players. He or she can play a high card to take a trick without the risk of getting stuck with a heart or the queen of spades. Don't get stuck with high cards that you might be forced to play later. For example, if the first two players play a jack and queen, it is better to unload a ten rather than a three. If you play the three, you might need to play the ten later in the game when it could take a trick that includes hearts or the queen of spades.

Take calculated risks to get rid of high cards. For example, you can safely lead the ace of clubs if it is your only club and clubs have not been played yet. The odds are good that the remaining twelve clubs are spread out among the three other players, so you probably won't get the queen of spades. By leading the ace, you can safely get rid of it early and save your low cards for later.

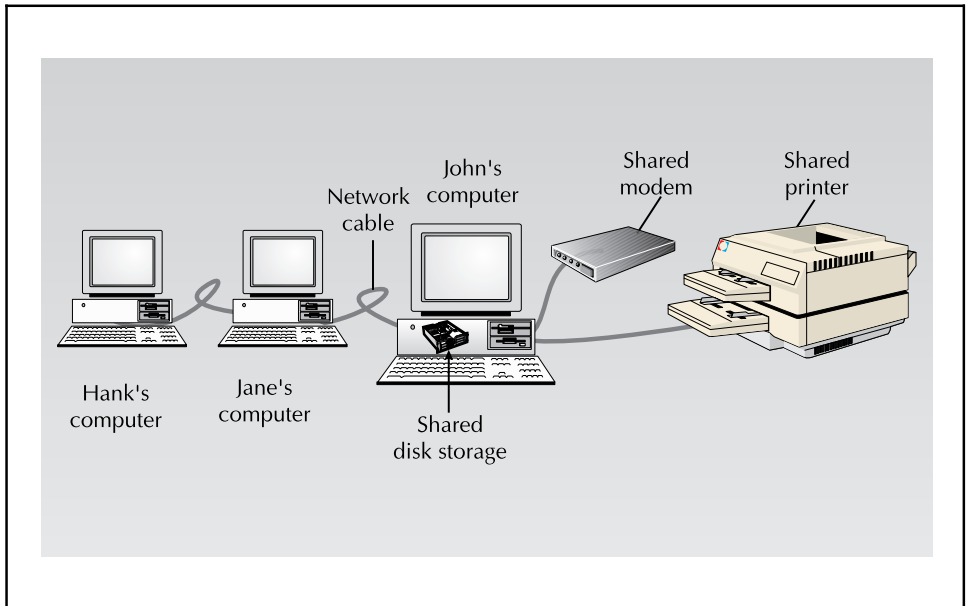
Avoid leading out a suit of which you hold a lot of cards. For example, don't lead an ace of clubs if you are holding seven other clubs. The remaining five clubs are divided among the three other players, and there's a good chance one of them will be able to play off a heart or the queen of spades.

Your computer most likely has its own disk drives and a printer attached to it. But in many offices today, computers are connected together by cable or by phone line in a network. Networks allow people to communicate with one another with their computer. In a network, a computer can be attached to computers in adjoining offices, adjoining buildings, and potentially to computers around the globe. When you're connected to a network, you can open and save files on other computers or use resources attached to those computers, including printers, fax machines, and CD-ROM drives.

This chapter explains how to use Windows 95 as part of a network. It describes the basic concepts of networking and how to access resources on a network. It illustrates how to print over a network, how to make sure your data is secure, how to log on and off, and how to access drives and folders on a network. Finally, it explains how to access remote printers and make the printers attached to your computer available to others on a network.

Network Hierarchies: The Basics

Before discussing networking features and utilities in Windows 95, let's go over some basic concepts to help you see how a network is built. A network can be as small as two computers or consist of hundreds or thousands of computers. In a small network like the one in Figure 14-1, shared peripherals, or resources, are attached to only one computer, "John's Computer."



The computers in this network share resources attached to "John's Computer"

Figure 14-1.

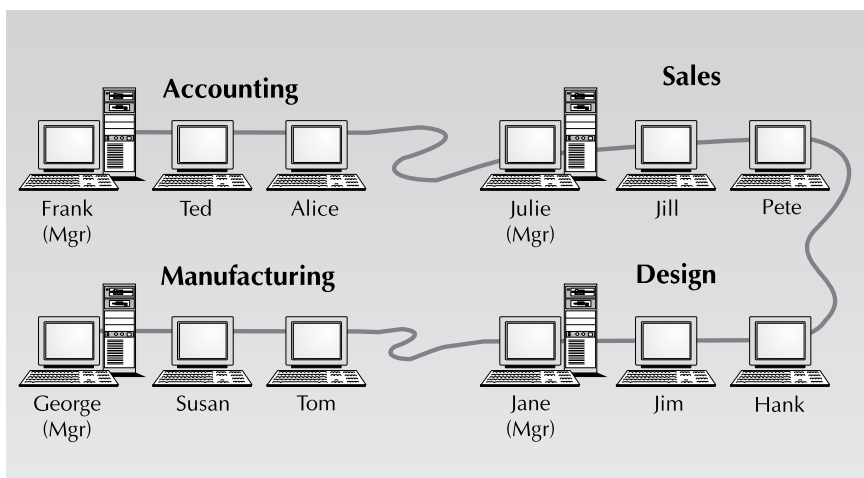
The point of this illustration is to show how peripherals—the modem and printer—are attached to John's Computer, and that users have to go through John's Computer to use peripherals.

You access other computers on your network by opening the Network Neighborhood object on the Windows 95 desktop. If your network is large, the Network Neighborhood window may only show the computers in your immediate workgroup. A *workgroup* is a collection of computers and computer users that share similar resources and belong to a group that has the same name. For example, the computers and users in an accounting department would be part of the same workgroup, as would the computers and users in a production department. As pictured in Figure 14-2, workgroups are assigned names like "Accounting," "Sales," "Manufacturing," and "Design."

If Microsoft Windows NT servers are part of your network, you need to know a little about domains. A *domain* is similar to a workgroup but much larger in scale. For example, Figure 14-3 shows a network divided into two domains called "Eastern Domain" and "Western Domain." These domains serve the eastern division and western division of a large organization. Each domain has its own computers and workgroups and is managed independently of the other domain. However, the domains are interconnected. Users in both domains can exchange information and share resources as defined by the policies put in place by domain managers.

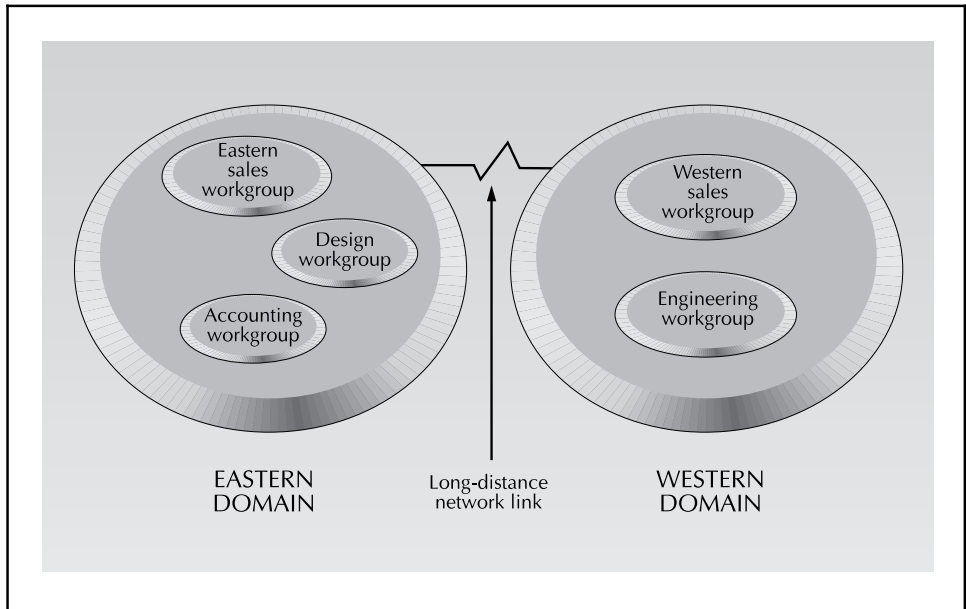
Large Windows 95 networks are typically subdivided into workgroups

Figure 14-2.



A network divided into two domains, Eastern and Western

Figure 14-3.



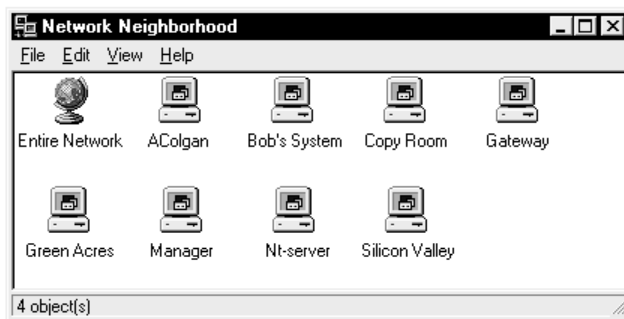
Workgroups and domains give network users the following advantages:

- ⇒ When you open the Network Neighborhood, you only see the computers in your immediate network or workgroup neighborhood, not all the computers attached to your organization's network. That makes things less confusing.
- ⇒ It's easier to find resources such as disk drives and printers that you're likely to need. For example, if you were looking for marketing information, you could check a file server in the Marketing workgroup.
- ⇒ It is easy to send electronic mail messages to all the users in your workgroup, or to all the users in another workgroup.
- ⇒ Workgroups and domains have security advantages. Users in one workgroup cannot access resources in other workgroups unless they have been given rights to do so by a network administrator.

Accessing Resources over a Network

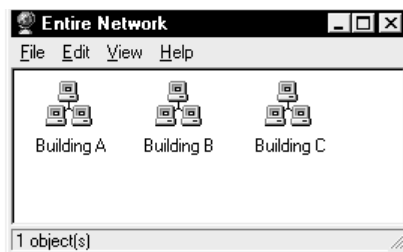
To view other computers attached to your network, double-click the Network Neighborhood object on the Windows 95 desktop. The Network

Neighborhood window opens to a list of computers you can access that might have resources to share. Here's the network neighborhood for my computer:



Note: If you don't see the Network Neighborhood object, your system either is not attached to a network or is incorrectly attached. Contact the person who administers your network for help.

In the Network Neighborhood window is an object for each computer in your immediate network neighborhood. To view a list of computers in other neighborhoods, double-click the Entire Network object. A window opens to show other workgroups that you can open and view. An example is shown here:

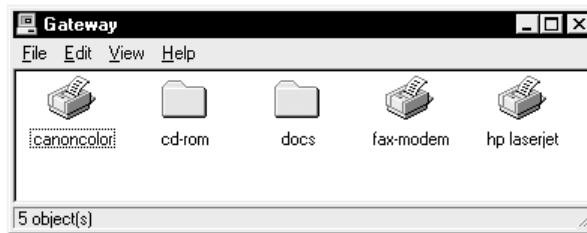


You can see that grouping computers into workgroups in this way helps to reduce the number of computers you need to scan when looking for resources on a network and it makes it easier to track down exactly the computer you're looking for.



Tip: In the above picture, workgroups are formed by physical location (i.e., buildings), but workgroups might also consist of scattered groups of people like on-the-road sales people who belong to a group called Sales.

When you locate the computer that has resources you want to use, double-click its object to open a window similar to the following. In this example, I double-clicked the Gateway computer in my Network Neighborhood window. A number of resources are attached to Gateway, including a Canon color printer, a CD-ROM drive, a file folder called “docs,” a fax modem, and an HP LaserJet printer.



Note: Not all resources on other computers are available for you to use. The owner of the computer must share resources before they appear in the window for the computer. Likewise, you can control which resources on your computer are shared with others.

Since the objects on the Gateway computer (in the previous illustration) are shared, I can access them over the network from my computer in the following ways:

- ⇒ Open files in the docs folder.
- ⇒ Put files in the docs folder for others to access.
- ⇒ Access programs or open files on a disk in the CD-ROM drive.
- ⇒ Print documents on the Canon or HP printer.
- ⇒ Send a fax by accessing the fax-modem attached to the Gateway computer.

About Network Files

When you open a shared folder that is located on a network computer, a window opens on your desktop. It shows you files on the remote computer

and makes them look as if they are on your local computer. The only way to tell the difference between your own files and those on a remote computer is that it takes a few seconds longer to open a remote file. Here are some of the things you can do with files that are stored on other computers, assuming you have the access rights to do them:

- ⇒ List the files in any order, or use the Find utility to locate files
- ⇒ Double-click to open a file or program
- ⇒ Click and drag to copy or move a file between the network computer and your computer
- ⇒ Delete files, rename them, and change their attributes

About Network Printing

If you want to print to a printer that is attached to another network computer, your system must have a copy of the “printer drivers” that tell it how to use the printer. Fortunately, Windows 95 makes this task easy with its Point and Print feature. All you need to do is drag and drop the remote printer object from the Network Neighborhood window to your local Printers window. The drivers for the printer that are already installed on the remote computer are then copied to your computer so you can print to the network printer as if it were local. For more information on this feature, refer to “Installing Network Printers” in Appendix B.

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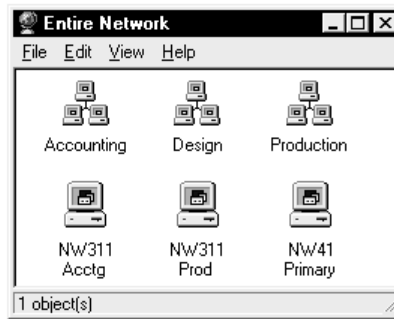


Note: Once you’ve installed a network printer, your applications can send print jobs to it as if it were attached to your computer.

When you print a file from one of your applications, you choose the network printer in the Print dialog box. You can have Windows tell you when a document is done printing, which is good to know if the printer is in another room and many documents are waiting in the queue to be printed.

About NetWare Networks

Windows 95 has built-in features for connecting with Novell NetWare servers. Once your computer is connected to the servers, you can browse filing systems, open and copy files between your computer and the servers, and use printers and other resources as well. NetWare servers appear in the Entire Network dialog box, as pictured in the following:



Note: NetWare servers appear at the end of the list of workgroups and domains in the Entire Network dialog box.

About Network Names

Windows' graphical user interface (all those little icons and objects) makes it easy to locate network resources. In most cases, you can access network computers and shared directories without typing long path names. You simply double-click an icon to access the resource.

However, you need to know the syntax for naming network resources in the Windows and NetWare environments. Files on a computer have a path that specifies the drive and folder where they are located (see "Working with Files: The Basics" in Chapter 7). For example, a file called EXAMPLE.TXT in the TUTORIAL folder on drive C has the path C:\TUTORIAL\EXAMPLE.TXT. The path simply points out the exact location of the file on the computer. Likewise, files located on network computers have paths that specify the network computer and the shared directory where they are located.

All Windows computers use the *uniform naming convention* (UNC) to specify file locations. The UNC format is:

`\\computername\path`

(continued)

(continued)

To indicate the above file on a network computer called TRAINING, for example, you would type:

```
\\TRAINING\C:\TUTORIAL\EXAMPLE.TXT
```

You simply insert the computer name before the file's path name and make sure to type two backslashes (\\) before the computer name. You would type such a name in a dialog box to open a file or run a program on a network computer. In the following illustration, the network path for running Qbasic on an NT-server network computer has been typed in the Open field of the Run Application dialog box:



If you access a NetWare server, the network path name is a little different. You must follow the standard NetWare format, as shown here:

```
computername/volumename:path\filename
```

Following the example above, and assuming that the NetWare server is named TRAINING and the volume is called VOL1, you would type the following network path:

```
TRAINING/VOL1:TUTORIAL\EXAMPLE.TXT
```

Security Issues

You can usually see drives and folders in windows as you browse a network, but that doesn't mean you can access those files and folders and their resources. Levels of security can be applied to items on a network, as follows:

- ⇒ You can read but not write to files
- ⇒ You can read and write files
- ⇒ You can read and write files, but only if you know the password

When computer files and resources are placed on a network, the network administrator or computer operator who places them there can apply security rights to keep certain users from getting at the files and resources. If you are connected to a Windows NT domain, your right to access files and resources depends on which groups you belong to. For example, you might belong to a generic group called “network users” that has limited rights, or a privileged group called “administrative users” that has the right to open files and use resources at will.



Tip: See your network administrator or the owner of the computer whose files you want to access if you need more access rights.

Network Options and Settings

Before you get started with the exercises in this chapter, you should identify your computer’s network settings, such as its network name, the workgroup it belongs to, and how folders, drives, and other resources are shared on your computer.



Note: This discussion of network settings assumes that your network administrator has already installed the network and established your computer as a workstation.

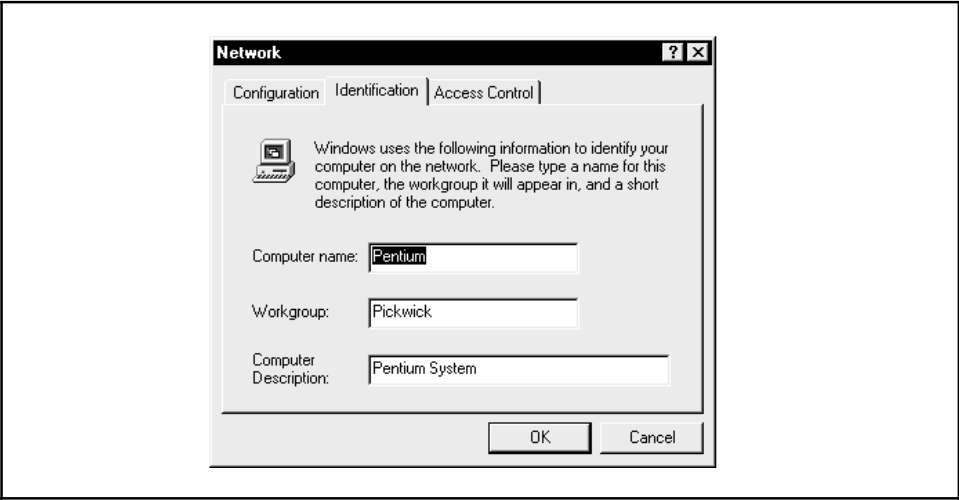
To find out what your network settings are, open the Control Panel, double-click the Network object, and click the Identification tab. You’ll see the dialog box shown in Figure 14-4.

The Computer name is the name for your computer that other people see when they browse the network. The Workgroup is the name of the local network that your computer belongs to. The Computer Description field just provides a place for writing a detailed description of your computer. Other users see this description when they browse the network.

Now click the Access Control tab to determine how the files on your computer and the resources attached to it are shared over the network. You see the dialog box shown in Figure 14-5.

Identifying
your
computer's
network name
and
workgroup
name

Figure 14-4.

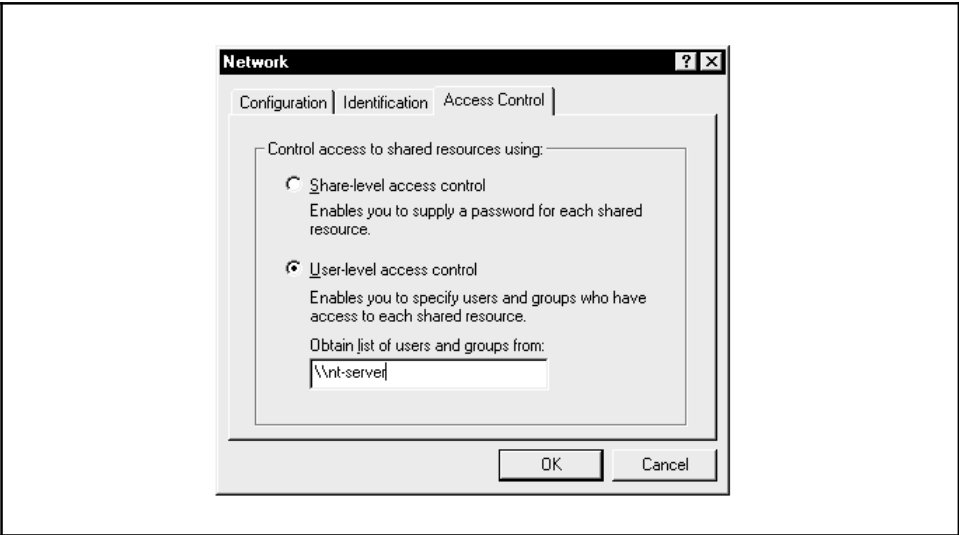


The Access Control tab in Figure 14-5 has these options:

- **Share-level access control** If you click this checkbox, you can specify the passwords that other network users must type to access the resources you share on your computer.
- **User-level access control** Click this checkbox if your network has a special *security server* that validates or authenticates users before they can access your computer. Security servers typically run the Microsoft

Identifying
your
computer's
access control
settings

Figure 14-5.

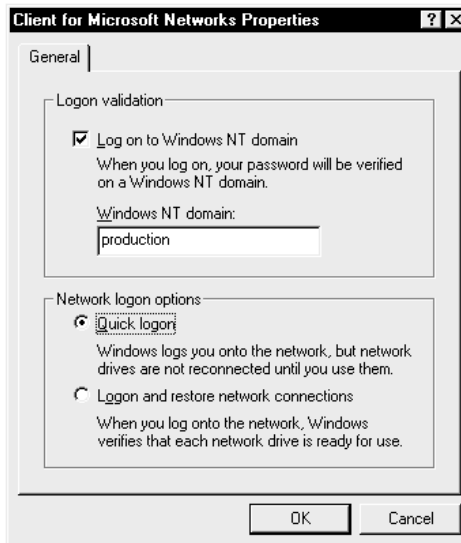


Windows NT and Novell NetWare operating systems. Ask your network administrator or the person who manages the security server for details on how to set user-level access controls.

If your computer is part of a Microsoft Windows NT Server domain, you can check or change the domain settings for your network. Open the Network utility in the Control Panel, click Client for Microsoft Network on the Configuration tab, and click the Properties button. You see the dialog box in Figure 14-6.

To automatically log on to the Windows NT domain when you start Windows 95, click the top option, then type the name of the domain server in the Windows NT domain field.

Click the Quick logon option in the lower box if you want your workstation *not* to attempt to connect with all the network connections you made during previous sessions. If you click this option, your workstation only makes those connections when you actually try to use them (and speeds up the logon). Click the bottom option to make all network connections each time you start Windows 95.

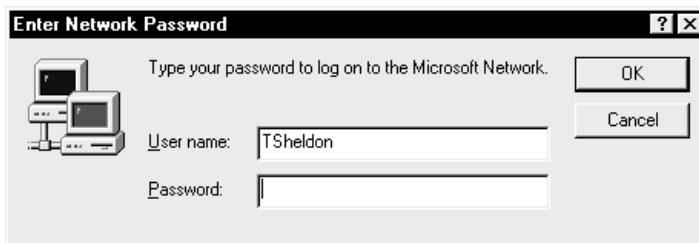


Identifying
domain
settings

Figure 14-6.

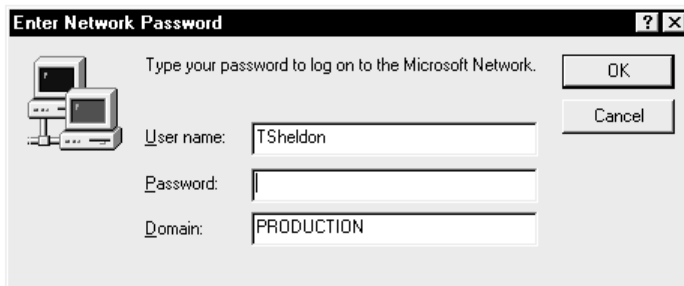
Logging On to a Network

When you start a Windows 95 computer that is attached to a network, you see a logon dialog box similar to the following. Type your user name in the User name field and a password in the Password field. Your network administrator may assign a name and password to you, or you may type your own name the first time you log in. Don't forget your password.



Logging On to Windows NT Servers

If Microsoft Windows NT servers are attached to your network and you selected "Log on to Windows NT domain" in Figure 14-6, you see a domain logon dialog box like the one pictured below when you start your computer:



Be sure to type the name of the domain you want to log on to in the Domain field. If other people use your computer, they may have typed a different domain name the last time they logged on.



Note: You can click Cancel in the Enter Network Password dialog box to bypass domain logon. This speeds up the startup process, but you'll need to log on later to access network resources.

Logging On to NetWare Servers

To access a NetWare server, follow the steps below. You must give a user name and password for each NetWare server, unless your user name and password on the NetWare server are the same as the ones you used to log on to Windows 95. If they are the same, you gain immediate access to the NetWare server; if not, you must type your logon name and password of the resource you are trying to access.



Note: If you right-click a NetWare server and choose Properties, a connection is made so you can view those properties even though you're not really logged on. This may cause a problem in versions of NetWare that limit the number of users (the 20-user version, for example) that can access the server at once.

To log on to a NetWare server, do the following:

1. Open the Network Neighborhood window.
2. Right-click the object that represents the NetWare server you want to connect with.
3. Choose Attach as from the menu.
4. Type a user name and password, then click OK.

Accessing Drives and Folders on a Network

You can access drives, folders, and files on other Windows computers as long as the drives have been shared and you have the appropriate rights to access them. The owner of the network computer or the network administrator determine what is shared and who has access to it. This section discusses how to access shared drives and folders on other computers. See "Sharing Folders and Drives on a Network" later in this chapter to learn how to share the folders and drives on your own computer.

There are two ways to work with network drives and folders:

- Browse network computers and folders by opening the Network Neighborhood window or Explorer, then copy, move, delete, rename, or perform other tasks with the files in the window.

- ⇒ *Map* the folders (or directories on NetWare servers) to a drive letter so you can access them from inside your programs. For example, if the hard drive in your local computer is drive C, you would map the first network folder so it appears as drive D from inside your programs.



Note: You only need to map a drive once. After that, Windows 95 lets you map it every time your computer starts.

Browsing a Network

The Network Neighborhood window is where you go to browse the computers and resources on a network. In the following example, we'll open a folder located on another network computer. Then you'll see how easy it is to copy or move files between systems. (You can follow these same steps if you're working in Explorer.)



Tip: If you're sharing files with many different people, you can create a common folder called "Public" or some other name for files that all users can share. Then, when someone wants to send you a file, they copy it to the folder and call you to tell you it's there.

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1. Start by opening the Network Neighborhood window. Double-click the Network Neighborhood object on your desktop. You see a list of computers in your network neighborhood. Here's an example:

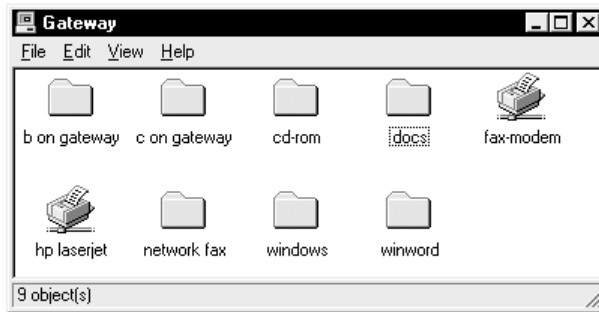


2. If the list is long, choose List on the View menu to view small icons instead of the large icons pictured here.

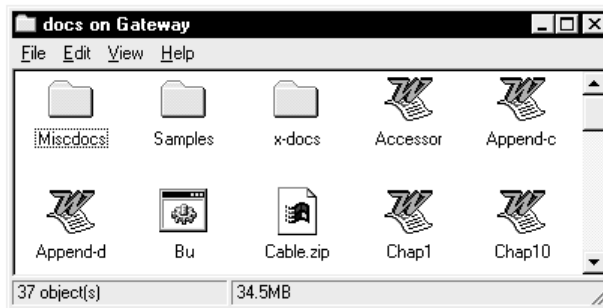


Note: To view computers in other workgroups or domains, double-click the Entire Network object in the Network Neighborhood window, then choose the workgroup, domain, or NetWare server you want to access.

3. Once you locate the computer you want to access, double-click its icon. A window opens that shows all the shared resources on the computer. An example is shown here:



4. Double-click the folder you want to work with. In this case, I opened the docs on Gateway folder, which opens the following window:



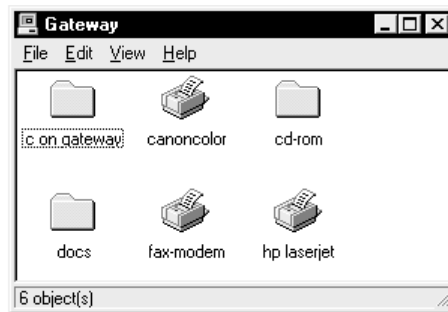
Note: In Windows 95 networks, the rights you have in a folder also apply to any subfolders within the folder.

Now that a window is open on the remote folder, you can copy or move files from it or to it. For example, I used this folder to back up and protect the files I created during the writing of this book. Each evening, I simply copied all the files on my work computer to the docs on Gateway folder

Accessing Drives and CD-ROMs

It's possible to share an entire drive so other users can access it, although that's not usually practical or security-conscious. Sharing an entire hard drive would give others access to all its folders. However, sharing an entire CD-ROM drive is practical, since you can't write data to a CD-ROM and most CDs offer reference information, not personal files and the like.

A shared drive, like a CD-ROM, appears as a folder when you view the resources available on a network computer. In this illustration, the folder called "c on gateway" is a shared hard drive, and "cd-rom" is a shared CD-ROM drive. If you double-click the cd-rom folder, a window appears to display all the subfolders on the CD-ROM in the drive.

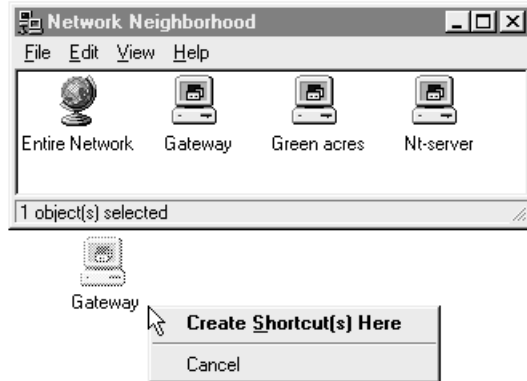


Caution: For security reasons, don't share an entire drive unless you want to give users access to all the folders on it. In most cases, you should share individual folders, not entire drives.

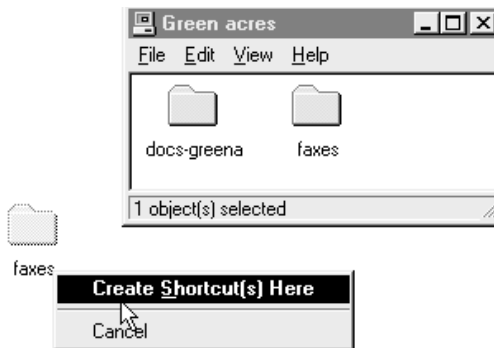
Creating a Shortcut to a Network Computer or Folder

Once you've located a network computer or folder that you need to access often, you can create a shortcut for it on your desktop. Doing so makes accessing the computer or folder easier in the future, since you don't have to go through all the steps for locating the shared folder on another network computer. If you often access many folders and resources on a particular network computer, you can create a shortcut for that computer on your desktop. However, if you only access one folder on a network computer, just create a shortcut for the folder, not for the computer.

For the following illustration, I right-clicked the Gateway computer in the Network Neighborhood window, dragged it onto the desktop of my computer, and chose Create Shortcut(s) Here from the menu.



For the next illustration, I created a shortcut for the Faxes folder on the Green acres computer by right-clicking and dragging the folder from the Green acres window to the desktop on my computer.



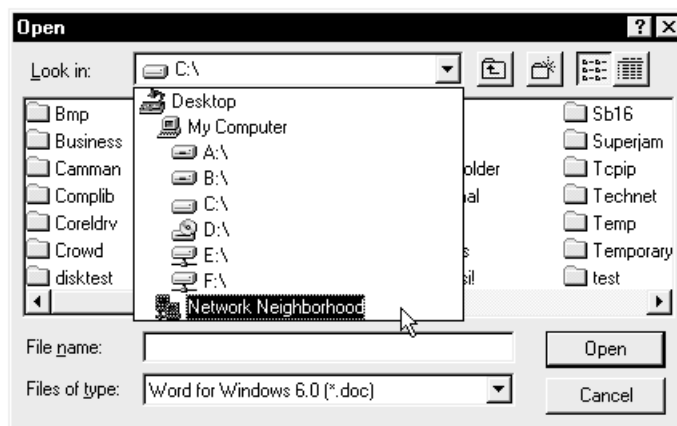
Accessing Network Files in Applications

You can access network drives, folders, and files from within Windows 95 applications. Once you've done that, you can open files on remote computers or save files to them. Here's how to access a network file from within a Windows 95 application:

1. Choose Open on your application's File menu and click the down-arrow button on the Look in field.

Accessing a network from within a Windows 95 application

Figure 14-7.

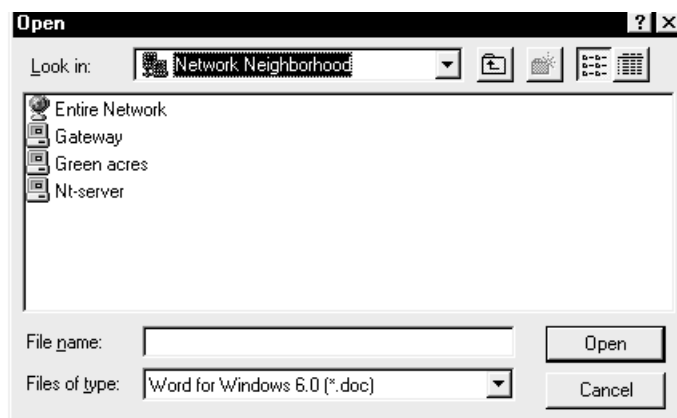


2. Choose Network Neighborhood, as shown in Figure 14-7.
Now the list in the window displays the computers in your network neighborhood. An example is shown in Figure 14-8.
3. Double-click the computer that has the folders you want to access, or click Entire Network to view other workgroups or domains.
4. Double-click a shared folder in the window, then choose a file to open or type the name of the file you want to save in the folder you selected.

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Selecting a network computer to access

Figure 14-8.

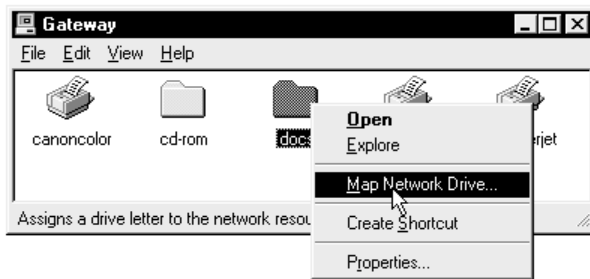


Mapping a Network Drive

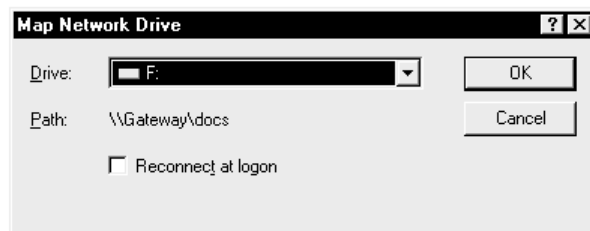
In order to access folders on network drives from some applications, you must assign a drive letter to the folder. For example, before I can access the docs folder on the Gateway computer from Microsoft Word for Windows, I must assign it the drive letter E on my computer. When assigning drive letters, you can make the mapping permanent so the assignments are available every time you start Windows 95.

To map a folder in the network neighborhood, do the following:

1. Open your network neighborhood and locate the folder you want to map.
2. Right-click the folder to open its context menu.
3. Choose Map Network Drive, as shown here:



4. The Map Network Drive dialog box appears, as shown here. The next available drive, F in this case, is recommended as the drive letter, but you can click the down-arrow button to choose a different drive letter.



Caution: Don't choose a drive letter that is already in use by one of the drives on your computer.

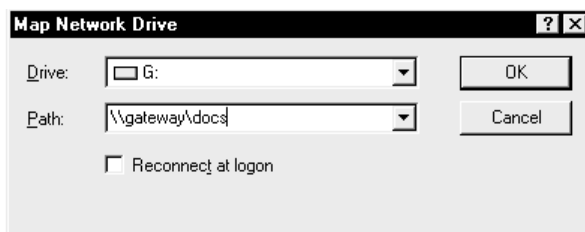
5. If you want to use this mapping every time you use Windows 95, click the Reconnect at logon box.
6. Click OK to create the mapping.

A window opens for the folder. Now the new drive letter appears in the folder's title bar. If you open the My Computer window, you'll see objects for the new mapped drives, as shown here:



You can now start an application and specify the drive in the Open or Save dialog box when you open or save files. For example, Figure 14-9 shows the Open dialog box for WordPad. Notice the two network drives at the bottom of the listing, both of which represent folders on the computer called Green acres. The first is mapped as drive E and the second is mapped as drive F.

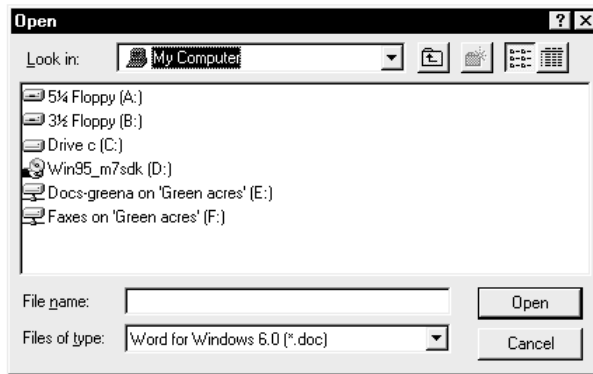
In some cases, you might need to enter the uniform naming convention path name to the computer and folder you want to access. For example, if you click the Network button in the Word for Windows Open dialog box, the following dialog box appears:



The next available drive letter is recommended in the Drive field. You must type a path to the computer and folder in the Path field. Refer to “About Network Names” earlier in this chapter for instructions on typing network names.

Mapped drives are accessible from within applications. Note the “Green Acres” drives

Figure 14-9.



Disconnecting Mapped Resources

If you want to disconnect a mapped drive to free its drive letter for other uses or to remove the connection to the device, follow these steps:



Tip: Some servers have a limited number of licenses, which limits the number of users who can access them at one time. Disconnect from these servers if you are not actively accessing resources.

1. Open the My Computer window.
2. Right-click the mapped object you want to disconnect. You'll see its context menu, as shown in Figure 14-10.
3. Choose Disconnect to remove the mapping.

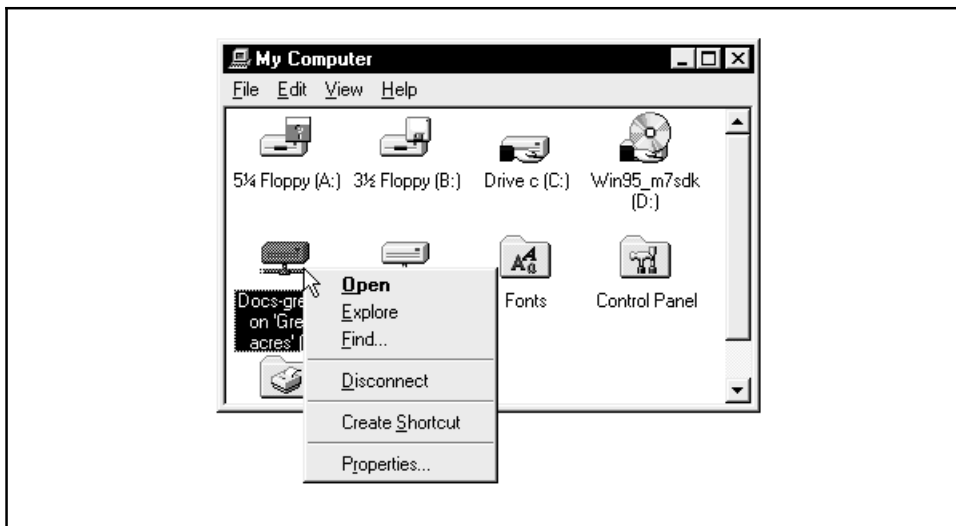
Finding Network Resources

Use the Find command to locate computers attached to a network. There are two places to start looking for resources:

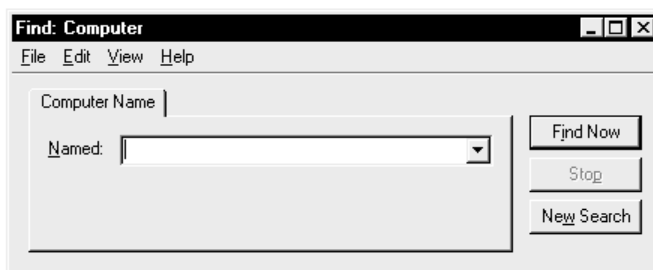
- On the Start menu, choose Find, and then choose Computer.
- Right-click the Network Neighborhood object, and then choose Find Computer on the menu.

Disconnecting
a network
drive

Figure 14-10.



Either way, the following dialog box appears. Simply type the name of the computer you want to locate.



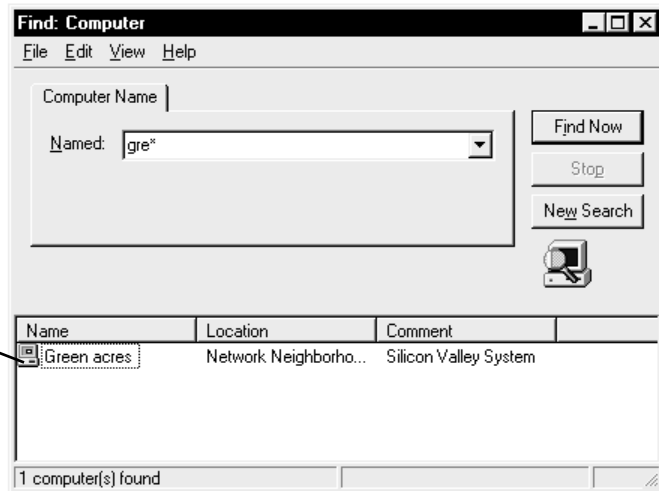
You can use wildcard characters if you don't know the entire name or don't feel like typing it out. For example, typing **gre*** in the Named field finds all computers with names that start with "gre," such as "Green acres." In Figure 14-11, the Find Computer dialog box lists the names of all the "gre" computers it found.

You can double-click the icon of a computer in the list to open its window, or you can right-click the icon and drag it to your desktop to create a shortcut.

Network computers found in the search are listed in the lower window of the Find dialog box

Figure 14-11.

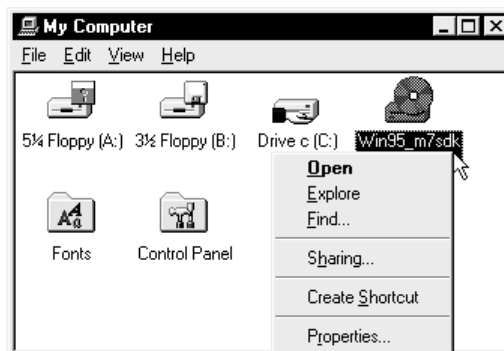
Drag to your desktop to create a shortcut



Sharing Folders and Drives on a Network

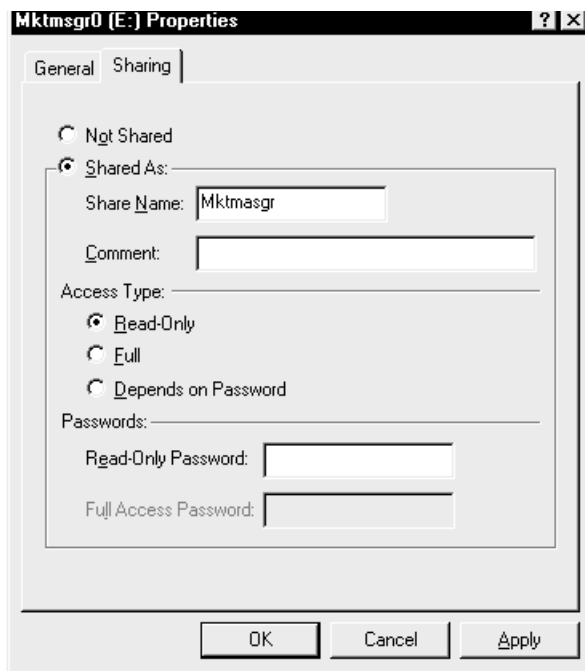
You can share drives, CD-ROMs, and folders with other users on the network. The procedure for sharing is described below:

1. Open the My Computer window to share drives and CD-ROMs, or open a drive to share a folder on that drive.
2. Right-click the object you want to share. A menu appears, as shown here. In this example, I want to share the CD-ROM drive, but you can right-click a folder as well.



Configuring
share options
for a disk

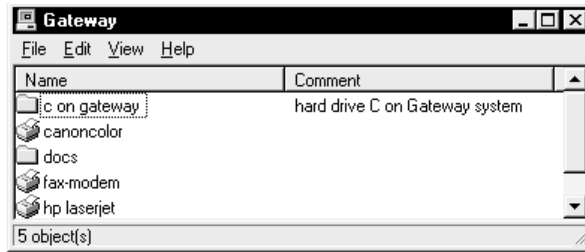
Figure 14-12.



3. Click the Sharing tab on the menu, then click Shared As on the dialog box that appears. The options on the Sharing tab are shown in Figure 14-12.
4. Choose options and fill out information in the Sharing tab. Click OK when you're done.

Sharing tab options and fields in the Shared As area are described in detail here:

- ⇒ **Share Name** This is the name that will appear to other users when they browse the network for resources to access.
- ⇒ **Comment** You can describe the object here. When users open the Network Neighborhood on their computer to find shared resources on network computers, the list can appear as shown in the following illustration, with the description on the right. Choose List on the View menu of a Network Neighborhood window to see this type of listing.



The following options are in the Access Type area of the Sharing page shown in Figure 14-12:

- ⇒ **Read-Only** Other users can read files from the device, but they can't change them without copying them to their own computers first. They can't copy the file back. If you want users to type a password before they can access the device or file, fill in the Read-Only Password field.
- ⇒ **Full** Other users can read and write files to and from the device. If you want to require users to type a password before they can access the device or file, fill in the Full-Access Password field.
- ⇒ **Depends on Password** This gives the device both read-only and full access rights, but users must type the correct password to gain access. Fill in both password fields if you choose this option.

The following options are in the Passwords area:

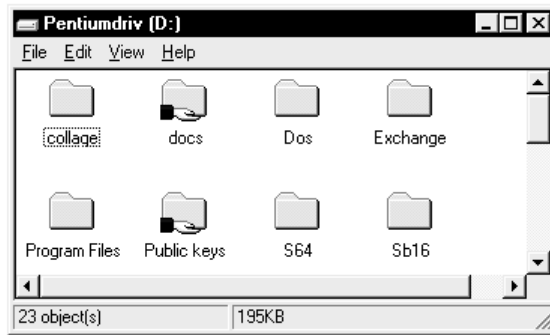
- ⇒ **Read-Only Password** Type the password that users must enter in order to gain read-only access to the device.
- ⇒ **Full-Access Password** Type the password that users must enter to gain read and write access to the device.



Note: If the device is a CD-ROM, users cannot write to it anyhow. CD-ROMs can only be read. (The term “ROM” stands for “read-only memory.”)

After sharing a device or folder, a hand appears under its icon, indicating that it can be accessed by other network users. In the following illustration, the docs and Public keys folders are shared (notice the hands). Notify other users when new folders

and resources become available, and provide them with read-only or read-write passwords, as necessary.



To revoke sharing status from a device, follow steps 1 through 3 above, but click the Not Shared checkbox on the Sharing tab.

Accessing and Sharing Printers

You can access printers on other computers and share printers attached to your own computer. Shared printers attached to other network computers appear in the window that opens when you double-click the computer in the Network Neighborhood window. For example, the following illustration shows the shared printers attached to a computer called Gateway:



Installing Support for a Shared Network Printer

Before you can use a printer that is attached to another computer, you must first install support for the printer on your own computer. Windows 95 and your programs require software

drivers for each brand and type of printer they print to. Drivers provide information on fonts, paper feed mechanisms, memory, and printing functions. Fortunately, Windows 95 makes it easy to get drivers from other computers.



Note: A detailed outline of this procedure is under “Installing Network Printers” in Appendix B.

1. On your own system, open the Printers folder.
2. In the Network Neighborhood, double-click the computer that has a shared printer attached to it.
3. Right-click the shared printer object on the network computer and drag it to your Printers folder. The following menu pops up:



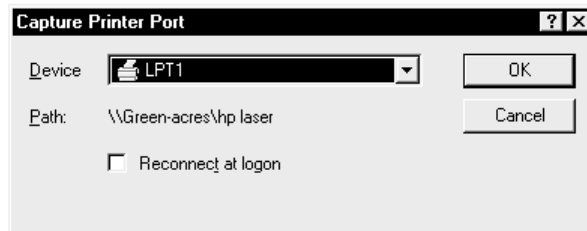
4. Choose the Install option on the context menu to install support for the printer and create an object in your Printers folder.

This procedure copies the printer driver files from the network computer to your computer so that you can print to the printer.

Mapping Printer Ports

For some applications, you must map a printer to a port on your computer, then send print jobs to the printer attached to the port. This is really a “pseudo” printer installation, since the printer is not really attached to the port. Your application is fooled into thinking it is there, however. Whenever you print to the port in your application, Windows 95 intercepts the print job and sends it to the network printer. Use this feature for basic text printing only or to use printers attached to NetWare servers.

1. **Open the network neighborhood and locate the computer that has the printer you want to map.**
2. **Double-click the computer and right-click the printer to display its context menu.**
3. **Choose Capture Printer Port from the menu. The following dialog box appears:**



4. **Choose a port by clicking the down-arrow button in the Device field.**



Caution: If a printer is already attached to the LPT1 port on your own computer, choose LPT2 or another port for the network printer.

5. **Click Reconnect at logon if you want to reestablish this connection the next time you log on.**
6. **Click OK to complete the mapping.**

Now you can access this printer from within your applications. It will appear as a printer attached to the port you selected.

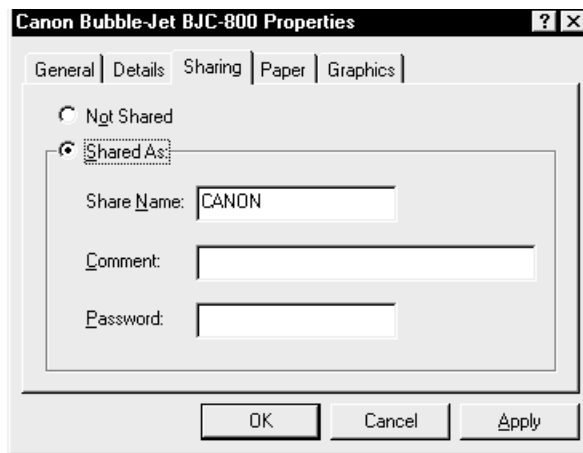
Sharing Printers Attached to Your Computer

You can share printers attached to your computer with other network users by following these steps:

1. **Open the My Computer object, then double-click the Printers folder. A window similar to the following opens:**



2. **Right-click the printer you want to share to open its context menu, then choose Sharing. The menu shown in Figure 14-13 appears.**



The Sharing dialog box for printers

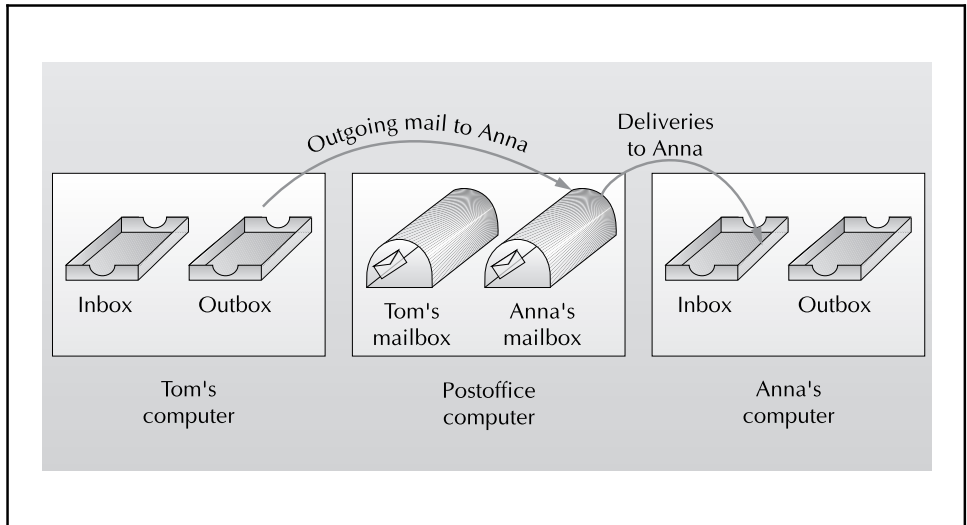
Figure 14-13.

3. **Click the Share As button, then type a name, comment, and password for the printer. The comment and password are optional. Comments appear in listings that other users see when they browse for network resources to access. If you enter a password, users must type that password to access the printer.**
4. **Click OK to complete the share.**

Now notify other users of your shared printer, its name, and the password they need to access it.

Many organizations with computer networks have electronic mail systems so people can share programs, files, printers, and resources. *Electronic mail*, or *e-mail*, has grown up along with networks. E-mail systems let people and computers exchange messages and information within their organizations—and outside their organizations over commercial services like The Microsoft Network, CompuServe and the Internet. However, each e-mail vendor usually has its own user interface, and that makes it hard for people to exchange messages or move from one program to another.

The Microsoft Exchange program (herein called “Exchange”), which is included with Windows 95, is a universal electronic mail system that can send and receive messages, faxes, files, and other information. It can do this over a variety of mail systems, including The Microsoft Network, CompuServe and the Internet. As pictured in Figure 15-1, Exchange uses an “Inbox” and “Outbox” metaphor. Messages exchanged among users within an organization are held in a Postoffice computer until they can be delivered.



Microsoft Exchange uses an Inbox, Outbox, and Postoffice metaphor
Figure 15-1.

All the Goodies on the Exchange

Here's a rundown of Exchange's primary features and benefits. Be sure to read over this list if you're just learning about Exchange. It will help you understand what you can do with the program.

- ⇒ Exchange works with a large number of e-mail systems, including Microsoft Mail, Microsoft Exchange Server, Lotus Notes, as well as mail systems developed by Apple, Banyan, DEC, Novell, RAM Mobile Data, and Skytel. CompuServe and Internet mail services are also supported.
- ⇒ Exchange includes the *workgroup edition* of Microsoft Mail so that users can exchange mail within a local workgroup. One computer in the workgroup is set up as a Postoffice. It stores messages that are in transit from one person to another.
- ⇒ As shown in Figure 15-2, you can attach files to mail messages. When recipients get files, they can open them and read them, and copy them to a folder on their own computers. The file attachments can contain text, pictures, sound, and video. Think of Exchange as a file exchange utility.
- ⇒ Exchange is integrated with the Windows 95 desktop. As pictured in Figure 15-2, you can drag and drop objects from folders on your system into messages you are creating.
- ⇒ You can format the text of messages and faxes with special fonts and character formatting (called rich text). You can also insert pictures, sound, and video as embedded objects in your messages. Pictures, sound, and video become part of the message text and are not attached files.
- ⇒ Exchange is an electronic mail system, but you can also use it like an electronic bulletin board. For example, your organization could have a shared folder called Public where messages could be posted for anyone to read. Files with information about meetings could be placed in the Public folder so that anyone could copy them.
- ⇒ Exchange works with the Telephony API (applications programming interface) to provide direct control of telephone equipment, as described in Chapter 16. It also works with dial-up networking features, as described in Chapter 17, so you can get your mail while you're on the road.

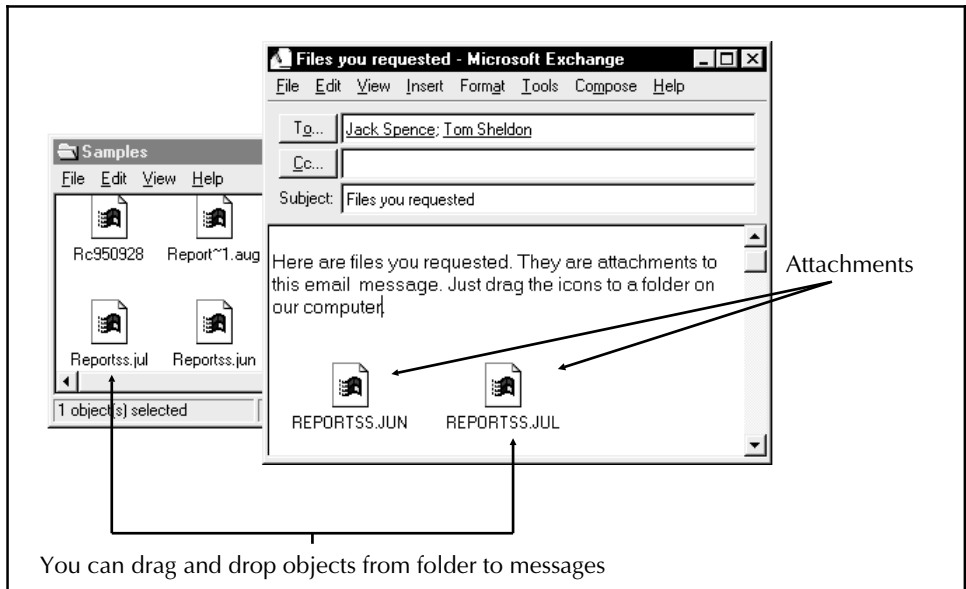
- ⇒ Exchange is the electronic mail system for The Microsoft Network (MSN), as discussed in Chapter 19. It is highly recommended that you sign up for MSN and use it to deliver mail to people outside your immediate organization.
- ⇒ Exchange includes a Personal Information Store where you can put messages, faxes, documents, forms, and other information you receive or want to send out. You can organize the Store in a variety of ways and perform extensive searches to locate information.
- ⇒ Exchange includes a Personal Address Book for storing the names, phone numbers, and other pertinent information about e-mail and fax recipients. A variety of applications can access the address book.



Note: You need a modem to access remote services and online services. If you have not yet installed a modem, refer to Appendix C. If you are connected to a network, you might be able to use a shared modem on another computer.

Installing Exchange

Exchange is not installed by default. During Windows 95 installation, you can choose to install the Exchange files. If you did that, you'll see an Inbox



The icons in these messages are file attachments

Figure 15-2.

on your desktop, but you still need to configure Exchange before you attempt to use it. If you didn't load the Exchange files during Windows 95 installation, you can do so by opening the Control Panel and running the Add/Remove Programs utility.



Note: Refer to your owner's manual for more information on installing and configuring Exchange.

At least one computer in your immediate workgroup must be set up as a *Postoffice* if you want to use the built-in Microsoft Mail program. Microsoft Mail is a *store-and-forward* application, which means that messages are stored in a central post office location, then forwarded to recipients (see Figure 15-1). Addressees can't receive mail if their computers are turned off. The Postoffice holds mail until they turn on their computers and it can be delivered. Mail senders don't need to contact recipients in advance or alert them that mail is coming. Mail does all this work.

Someone must be in charge of administering the Postoffice. It might be you or your network administrator. One of the Postoffice administrator's tasks is to create mail accounts for each Mail recipient. These accounts exist on the computer where the Postoffice is set up. Then, when you send mail in Exchange, you can view an address list of people who have mail accounts at the Postoffice and attach those names to your messages. Mail then handles all the routing of the messages you've addressed.



Note: Use the utility called "Microsoft Mail Postoffice" in the Control Panel to set up and maintain Microsoft Mail.

15

Starting and Using Exchange

You can start Exchange in several ways, as described here:



Inbox.exe

- Double-click the Inbox object on your desktop.
- Open the Start menu and choose Microsoft Exchange on the Program cascading menu:

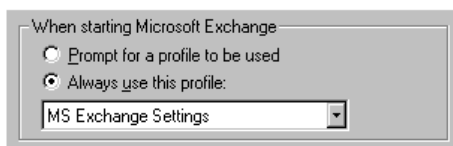


- ⇒ You can start Exchange by opening an application like WordPad, then choosing Send on the File menu. This way, you can send an e-mail message (or a fax) while working in any application.
- ⇒ If you're logged onto MSN (The Microsoft Network) and choose e-mail on its main menu, the Microsoft Exchange window opens so you can create new electronic mail or read mail you've received from other MSN users.

About Startup Profiles

You can start Exchange with different profiles to match the way you work. A *profile* is an Exchange configuration. For example, when you're in the office, you can start a profile that sets up a connection over your network to a Microsoft Mail Postoffice. When you're on the road, you can start a different profile that sets up a dial-up connection to the Microsoft Mail server. Other profiles might include connections to the Internet or CompuServe.

If profiles are already configured on your system and you want to pick a profile when Exchange starts, or specify a profile to use by default, choose Options on the Tools menu, then set one of the following options on the General tab:



If you click “Prompt for a profile to be used,” Exchange displays a list of profiles that you can choose from when it starts.

Exploring the Exchange Interface

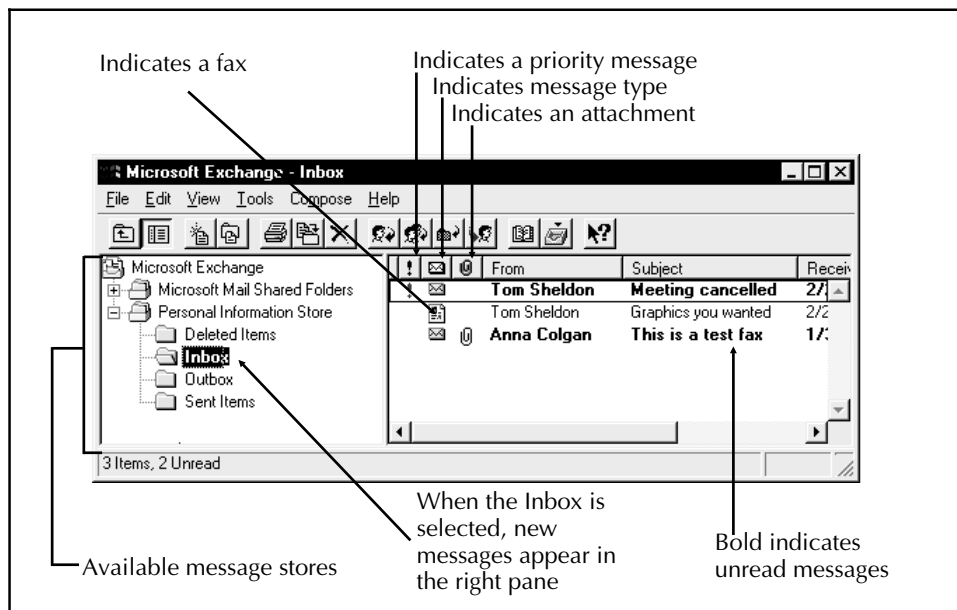
It's easy to get confused by Exchange unless you learn a few basic concepts. Read through this section before charging ahead. When you first start Exchange, you see a window similar to Figure 15-3. It has a menu bar, a toolbar, and two window panes.



Note: If you don't see the left pane, choose Folders on the View menu.

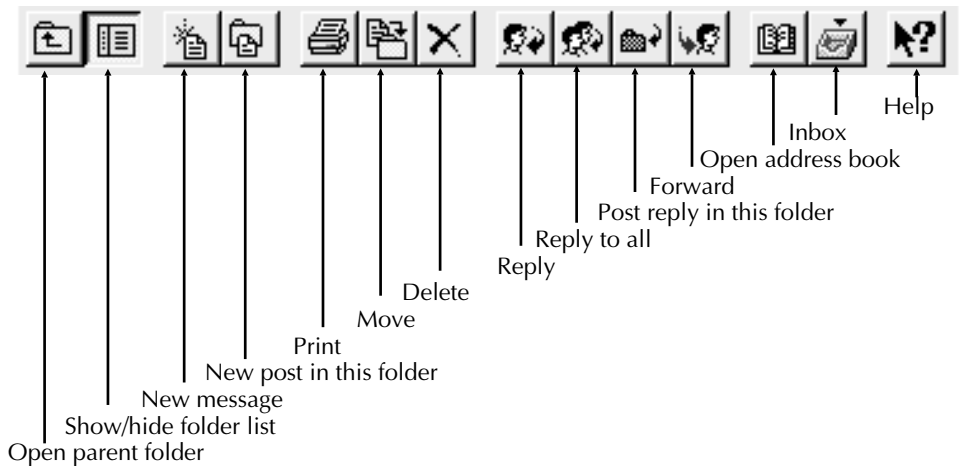
Notice the Inboxes and Outboxes in the left window pane:

- ⇒ Your personal Inbox and Outbox are pictured in the left pane under Personal Information Store.
- ⇒ Shared Inboxes and Outboxes (if they exist) are listed under Microsoft Mail Shared Folders or others. Remember, shared folders are like bulletin boards where you can place messages or files for others to access.



The Microsoft Exchange window
Figure 15-3.

Here is what the Exchange toolbar buttons do:



These buttons provide convenient access to functions that are also listed on Exchange's menus. Hold the mouse pointer over a button to get a description of what it does.

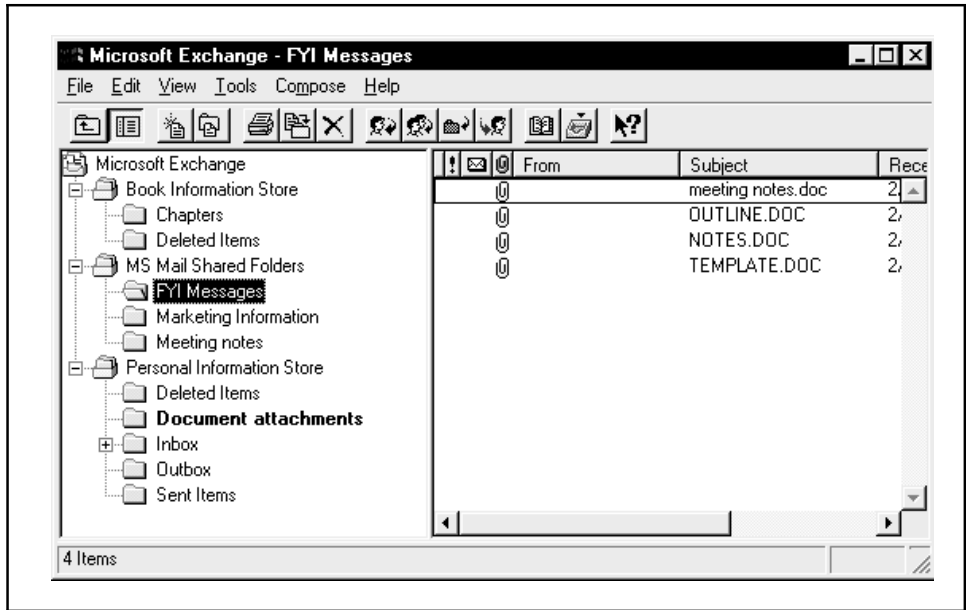
Here are some important things to know about the Exchange window:

- ⇒ The left pane lists folders called *information stores* where you can store incoming and outgoing messages and other information. For example, when you receive messages related to a special project, you can move the message to a folder called "Special Projects" that you've created for long-term storage.
- ⇒ Information store folders contain folders that are organized hierarchically, just like all folders in the Windows 95 file system. However, don't confuse an information store with the file system. An information store is only accessible when you are running Exchange.
- ⇒ The right window pane lists the contents of the folder that is selected in the left pane. In Figure 15-3, three messages are in the Inbox folder. You can rearrange the way messages are listed by priority, sender, content, and other criteria. Rearranging messages makes it easier to locate the messages you need to read, especially when numerous messages come in on busy days.

Figure 15-4 shows an Exchange window with several information stores. Look over the folders under each information store to get an idea about how you might organize your own information stores.

An example of how you might organize your own information stores

Figure 15-4.



Working in Exchange

Working in Exchange involves either sending messages or reading messages you've received. Other activities include disposing of messages you've read and moving them to appropriate folders in an information store for long-term storage.

The general procedure for creating a new message or fax is to open the Compose menu and choose New Message or New Fax, then type the message and address it. You can open one or more address books to locate the names and addresses of people you want to send messages to. Here are some things you can do while composing messages:

- ⇒ Format text
- ⇒ Attach files containing text, pictures, sound, and video to messages
- ⇒ Insert information (text, pictures, sound, video) as embedded objects in messages
- ⇒ Send messages to fax machines
- ⇒ Choose recipient names from an address book

Addresses and Address Books

Initially, there are two address books, assuming the Microsoft Mail Postoffice is installed:

- ⇒ **Postoffice Address List** This holds the names of users in the Microsoft Mail Postoffice.
- ⇒ **Personal Address List** This is where you create and store the names and addresses of people you correspond with.

If you sign up for and log onto The Microsoft Network, you can access its address book, which includes the names of all its members. You can then search for a member based on the first name, last name, city, or other information.








The Outbox, Message Icons, Archived Messages

The Outbox holds messages that are waiting to be delivered. If you are on the road, you can compose a group of messages, place them in the Outbox, and deliver them later when you are attached to your company's network. Messages that you compose and send are stored immediately in your Sent Mail folder.

It's inevitable—as soon as people know your e-mail address, messages start flooding in. Some people receive fifty to one hundred messages a day! Sorting through messages and finding the most important ones can be a big chore. Exchange lets you sort, filter, and organize messages in a variety of ways to make this task easier.

One way to locate messages you need to read is to look at the icons to the left of each message in the right pane. The icons you may see are shown and described in Table 15-1.

As I mentioned, you can delete the messages you've read or copy them to folders for long-term storage. For example, you could create a folder called "Board Presentation" and use it to store messages related to a board meeting. You could also create a folder called "Archive" and use it to store messages you've already read but want to keep on hand for future reference. A folder can be exported to a floppy disk to free space on your hard disk, then imported back to Exchange in the event you want to read one of your archived messages.

	Meaning
	A normal e-mail message
	A faxed document you can view with the Fax viewer
	A system message (usually indicating a non-delivered message)
	Indicates that a message has a file attached
	Indicates a high-priority message
	Indicates a low-priority message

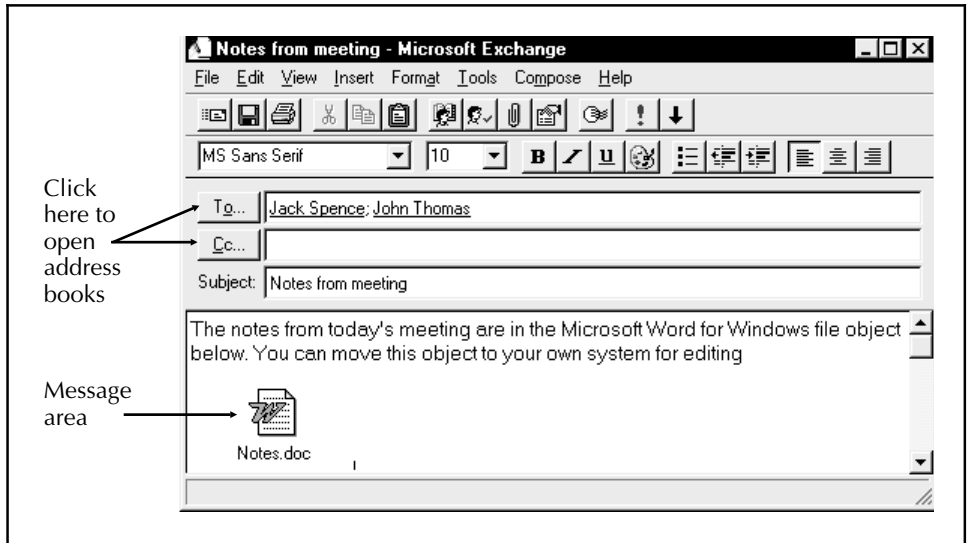
Exchange
Message Icons
Table 15-1.

Composing and Sending Messages

Once you’ve logged on to Exchange, you’re ready to compose messages and address them to other people. Here are the steps for composing a new message:

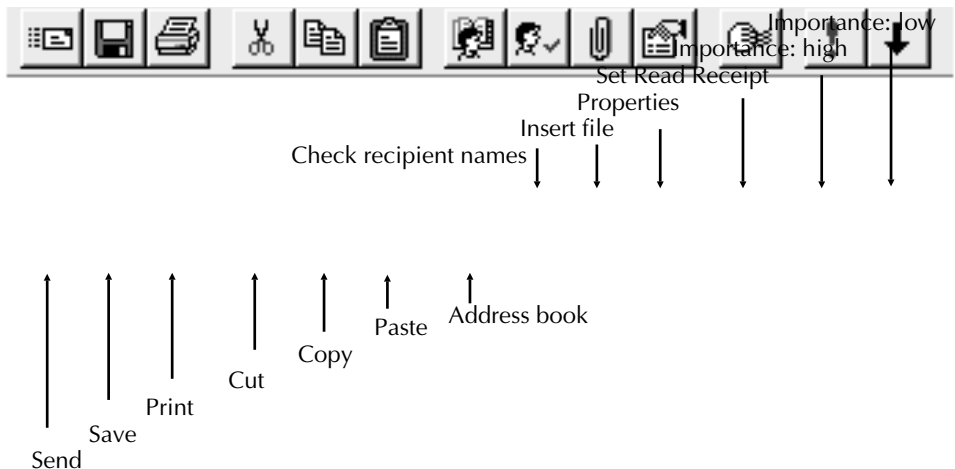
1. Choose New Message from the Compose menu or click the New Message button on the toolbar. A dialog box similar to Figure 15-5 appears. I filled in some fields on this box as an example.
2. Click the To button, then choose names from an address book, as described in “Addressing Messages,” below.
3. Type a subject for your message in the Subject field. The subject is the first thing recipients see when listing your message.
4. Type the text of your message in the message area.
5. Click the Insert File button—the button that shows a paper clip—to add a text file, picture, sound clip, video clip, or other attachment to the message. The file is sent with the message to the recipient.
6. Click the Send button (the leftmost button) or choose Send from the File menu to send the message.

The Compose Message window
Figure 15-5.



Note: You don't have to send a message immediately. Simply close the dialog box to save the message for later. You can place messages you plan to deliver at a later time in the Outbox, then send them when you're connected to the appropriate mail system.

Here's a description of the buttons on the toolbar of the Compose Message window:



Addressing Messages

You click the To or Cc (Courtesy copy) button to address a message. You can also click the Select names button on the toolbar. The dialog box shown in Figure 15-6 appears. The names listed in the left pane are from the Postoffice Address List. To choose names from your personal address list or another address list, click the down-arrow button in the top field and pick another address book. You can insert names from different address books in the same message. You can also copy names between address books.



Note: If you are addressing a message to a member of The Microsoft Network, you must be logged on before you can view the address list. After accessing the list, you can copy names from it to your personal address list.

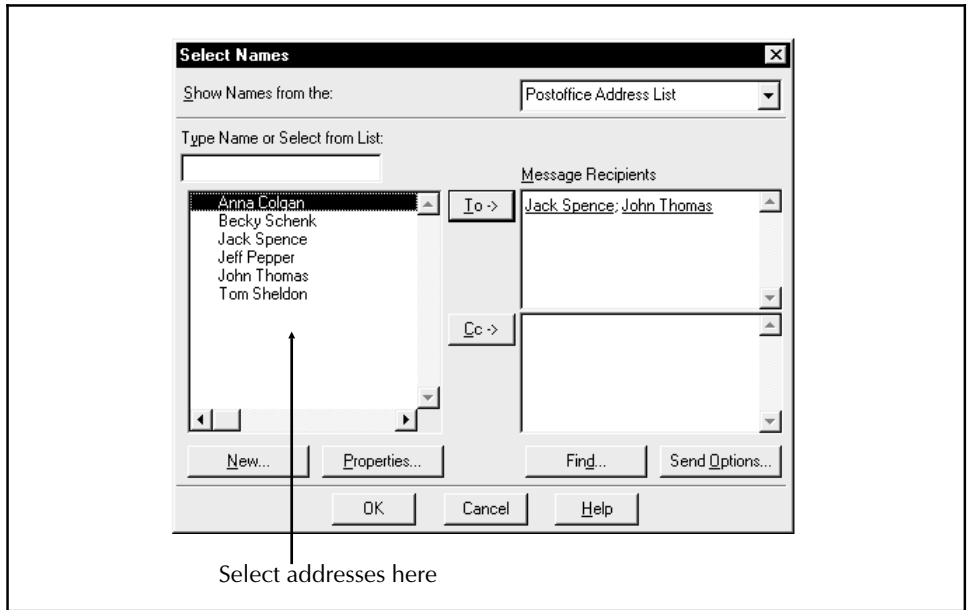
To select recipients, click a name on the left, then click the To or Cc button. The names are added to the right pane. Here's a description of the lower buttons on the dialog box:

- ⇒ **New** Click this button to enter a new name and address for a recipient. You can also create groups of recipients and add the names or group names you create to your personal address list.
- ⇒ **Properties** Displays information about a recipient. Click a name in the left or right pane, then click this button.
- ⇒ **Find** This is a utility to search one or more address lists for names.
- ⇒ **Send Options** Displays options for sending e-mail to a recipient.

Once you're done addressing the message, click the OK button. You are returned to the Message Compose dialog box, where you find the names added to the To or Cc field.

Addressing a
message

Figure 15-6.



Tip: You can remove a recipient name you just added by clicking it, then clicking the Cut button.

Attaching Files, Messages, and Objects

You can attach information to messages by choosing one of the options on the Insert menu, as shown here:



Remember, you can drag and drop files into messages, rather than use the options discussed here, but to do that you must have the window open where the files are located and where you can see it.

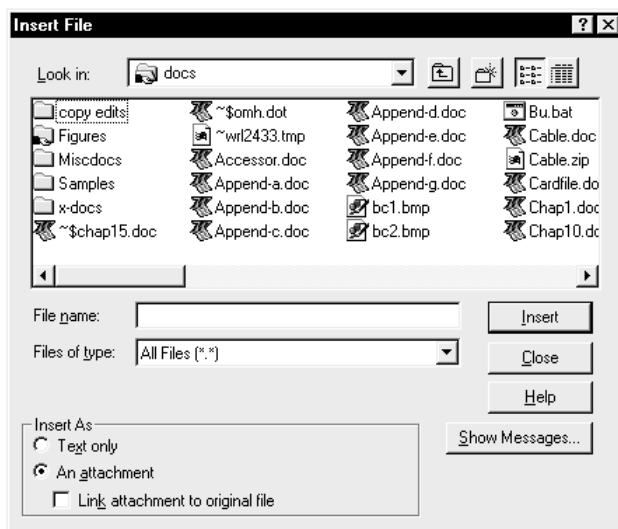
The information you attach to a message is sent as a stand-alone file, message, or object. You can also embed an object like a picture in the text area of a message. When an object is embedded, it remembers the program that was used to create it, so the recipient can open and edit the object as long as the object is editable and the recipient has the program that was used to create it.



Note: You can send a fax that has a file attached to it. If the receiving system is a fax machine, the attached file is printed. If it is a Windows 95 system, the attachment is sent as a file.

Inserting Files and Messages

When you choose File or Message from the Insert menu, a dialog box similar



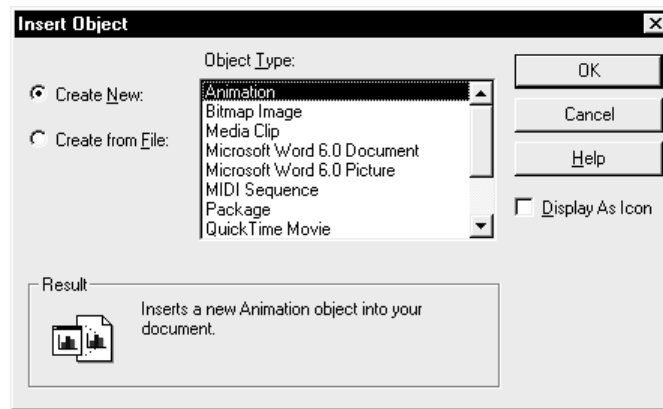
Inserting files
into messages
Figure 15-7.

to the one in Figure 15-7 appears. From here, you can search for an existing file or message. You already know how to browse with this type of dialog

box. Note that once you find a file, you can click Insert, then continue to browse for more files to insert. With the options at the bottom of the dialog box, you can insert the file as text or as an attachment. If you click Link attachment to original file, any changes made to the original are updated on the object in the message.

Inserting Objects into Messages

If you choose Object from the Insert menu, the following dialog box appears so you can pick an object type to insert in your message:



If you choose Create New in this dialog box, you can create an object right in your message. For example, if you choose Create New and Bitmap Image, Paint opens so you can create a new picture. The picture is then inserted at the cursor position in your message. You can also insert pre-recorded voice messages. Choose Media Clip, then Sound from the Insert Clip menu that appears.



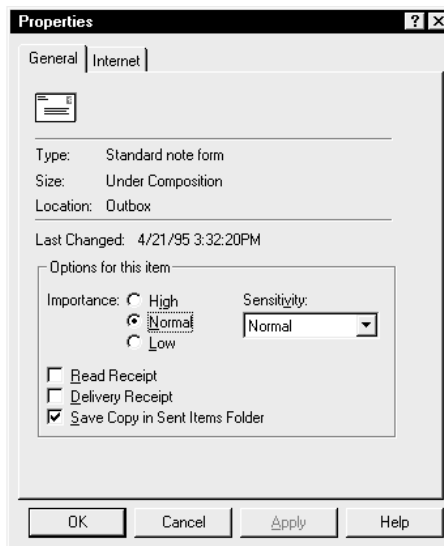
Note: Be sure to position the insertion point in your document before choosing the Create New option, since the object is inserted at the location of the cursor.

If you choose Create from File, the dialog box changes slightly. You see a filename field so you can type a filename and a Browse button so you can browse the filing system for a file object to insert in the message.

Other Message Options

Before you send a message and close the Compose Message dialog box, you might want to save it to a file, declare how important it is and how it should be treated, or change fax options (if the message is to be delivered by fax). Here's how to do that:

- ⇒ **Save the message** Choose Save As or Save on the File menu (or click the Save button) to save the message to a text file. The file will contain the To, Cc, and Subject information on the first few lines, followed by the text of the message.
- ⇒ **Change message properties** Choose Properties from the File menu (or click the Properties button) to view and change the properties of the message. You see a dialog box similar to the one in Figure 15-8. From here, you can state how important the message is (High, Normal, or Low) and, in the Sensitivity drop-down list, tell the recipient what kind of message it is (Normal, Personal, Private, or Confidential). You can also choose whether to get a read receipt and a delivery receipt. If you choose these options, Exchange informs you when the message has been read and delivered.



Setting
message
options
Figure 15-8.



Tip: Importance and sensitivity are two of many criteria by which recipients can sort their messages. Your organization might establish a standard for using these options.

➤ **Change the send options** Choose Send Options on the File menu to change faxing options if any of the recipients will receive the message on a fax machine. Refer to the next chapter for more information on faxing messages and setting fax options.

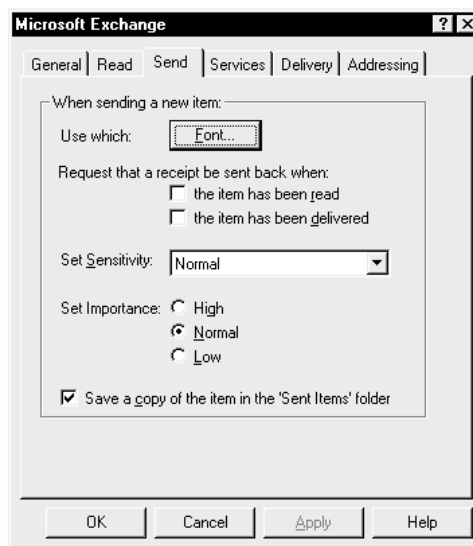
Choosing Defaults for the Way Messages Are Sent

You can choose defaults for the way that your messages are sent. Choose Options on the Tools menu, then click the Send tab to open the dialog box shown in Figure 15-9. The defaults you set on this dialog box apply to all messages, but you can still change the way messages are sent on an individual basis. For example, to receive notification when your messages are read, click the box called “the item has been read.” You’ll then get receipts for all messages, unless you specifically request that you don’t for a particular message.

When Messages Come In

If Exchange is already started and you’re working in other programs,

Setting default options for sending messages
Figure 15-9.



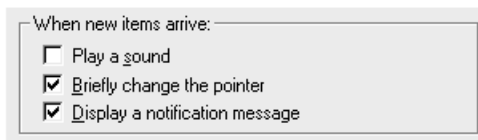
you'll see a message similar to the following when a new message arrives in your mailbox:



Click Yes to read the new message.

You can change how the program alerts you when new messages arrive. If you receive a lot of messages, you might want to turn off notification altogether or choose a less distracting way to be notified. Choose Options on

the Tool menu, then choose one of the following options on the General tab:



Keep in mind that you can read a message simply by clicking the Yes button in the box that notifies you when messages arrive. You don't have to open Exchange first and then locate the new message.

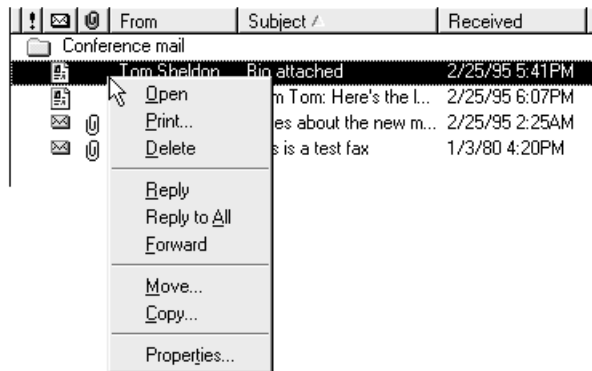
Getting Messages from the Inbox

When you click the Inbox folder for your Personal Message Store, you see a list of new messages similar to the following:

	From	Subject	Received	Size
Conference mail				
	Tom Sheldon	Bio attached	2/25/95 5:41PM	54K
	Tom Sheldon	From Tom: Here's the L...	2/25/95 6:07PM	51K
	Jeff Pepper	Notes about the new m...	2/25/95 2:25AM	10K
	Anna Colgan	This is a test fax	1/3/80 4:20PM	94K

Here is what you can do with these messages and how to tell what they are:

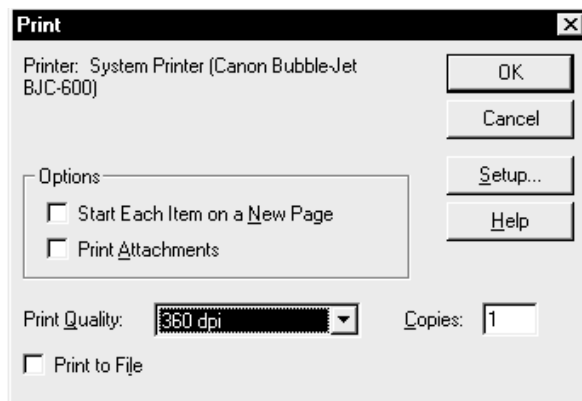
- ⇒ The left columns display icons that provide information about the status of messages, as described previously (see Table 15-1 earlier in this chapter).
- ⇒ Unread messages are in boldface type.
- ⇒ Click a column header button, such as Received, to sort the list on that column. Right-click a column header button to display a menu where you can choose an ascending or descending sort order.
- ⇒ Point in between column buttons, then click and drag left or right to adjust the width of columns.
- ⇒ Right-click a message to see its context menu, as shown in the following illustration. Notice that this menu reflects many of the options you find on the normal Exchange menus.



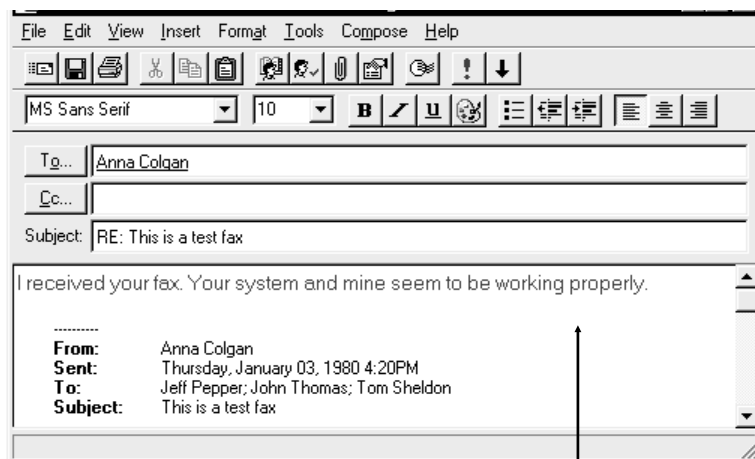
- ⇒ You can select more than one message at the same time by holding the CTRL key and clicking messages with the mouse. Once you've selected messages, you can reply to, copy, move, delete, or print them as a group.

Printing Messages

To print a message, right-click it, then choose Print from the menu. The following dialog box appears:



If you selected more than one message before you chose Print, the “Start Each Item on a New Page” option appears so you can print each message on a different page. If the message has attachments, choose Print Attachments to print the attached files.



Replying to
messages
Figure 15-10.

Replying to Messages You've Received

Once you have opened and read a message, you can reply to it by clicking the Reply button on the toolbar. You can also reply to a message by right-clicking it in Exchange's right window pane, then choosing Reply from the context menu. Exchange presents a reply form similar to the one in Figure 15-10. The original sender's name is already in the To field.

Type your reply at the top of the message area, then click the Send button on the Reply dialog box. The Send button is the left-most button on the toolbar. The original message is placed in the new message area.

Forwarding Messages You've Received

You can forward messages you've received to other people. Click a message, then either click the Forward button on the toolbar or right-click a message and choose Forward on the menu that appears. Address the message as you would any other message and click the Send button. You can set other options for forwarded messages just the same as you set options for the new messages you compose.

Moving, Copying, and Deleting Messages

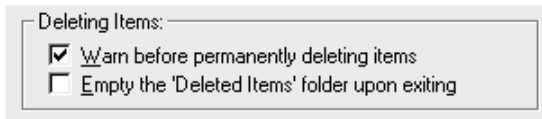
You can move and copy messages from the Inbox to any other folder in your Personal Information Store or to another information store. One way to move a message is to click and drag it to a folder in the left pane. Another way is to choose Move (or Copy) from the pop-up menu that appears when you right-click a message, then right-click the folder where you want to move the message and choose Paste. You can also paste messages in folders outside of Exchange. For example, you can place messages in your Personal or Business folder for later review.



Tip: Remember that you can copy, move, or delete more than one message at the same time. To select multiple messages for an operation, hold the CTRL key and click the messages.

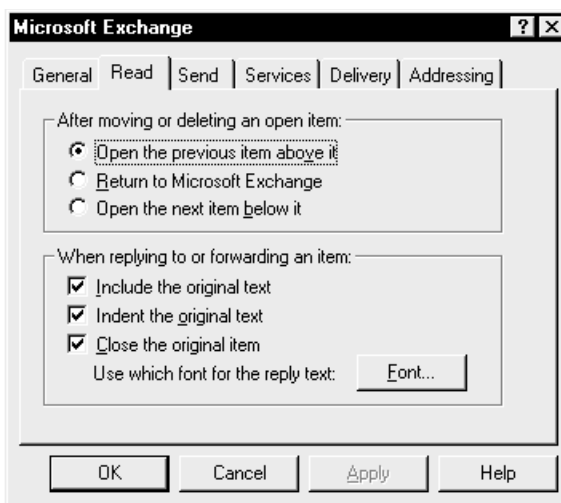
To delete a message in the Inbox, click it and press the DELETE key on your keyboard. You can also right-click a message and choose Delete. Deleted messages are placed in the Deleted folder.

You can change options for deleting items by opening the Options dialog box. Choose Options on the Tools menu, then set one of the following items on the General tab:



Deciding How to Handle Inbox Messages

You can set options for how received messages are handled. Choose Options on the Tools menu, then click the Read tab to display the following dialog box:



The options in the first field are useful when you're cleaning out your Inbox. They tell Exchange what to do after you've moved or deleted an item. The options in the second field define how text is handled in messages you

forward. You can either include the original text, indent it, or close it (remove it) from your forwarded message.

Organizing and Finding Messages

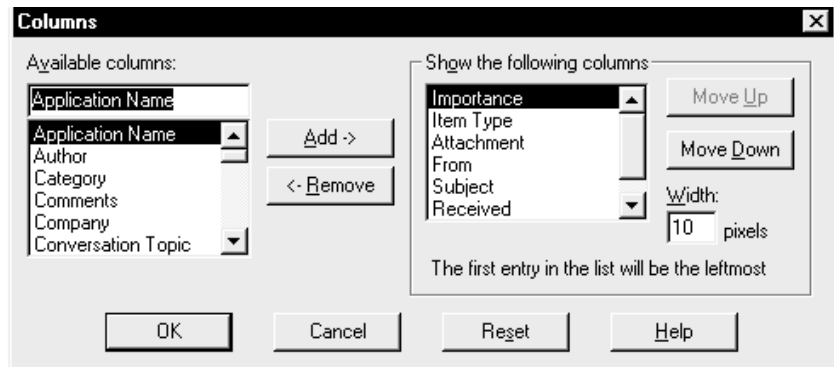
As you receive more and more electronic mail, you'll find it difficult to sort through the list. What's more, the list in your Inbox will keep getting longer unless you delete messages or move them to other folders. This section explains how to organize message lists and search for messages.

Organizing Message Lists

The View menu has a number of options you can use to sort columns in the message view pane. In "standard" Windows 95, you can choose Columns and Sort. If you have the full Microsoft Exchange client, you will also see the Group by and Filter options, which are discussed here for your convenience.

Choosing Which Columns to Display

Choose Columns on the View menu to display the following dialog box:

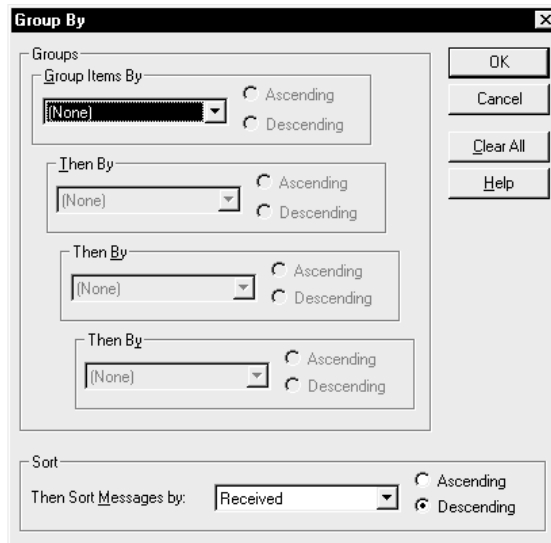


The right side of the box lists the columns that currently appear in the right pane of the Exchange window. You can change the left-to-right order of the columns by clicking a column name, then clicking the Move Up or Move Down button. You can also adjust the width of a column by typing a new value in the Width box, although it is probably easier and more intuitive to do this by dragging column buttons on the Exchange window itself.

To add new columns headers from the left side of the window, click the column name in the right field where you want to insert the new column. Then scroll through the Available Columns list on the left and click a column

Creating
message
groups

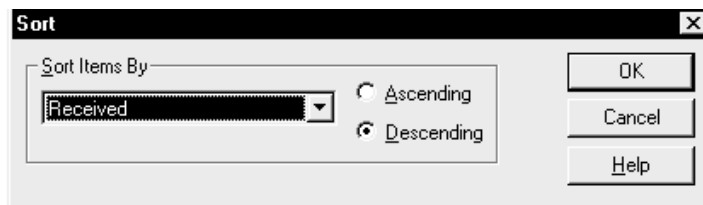
Figure 15-11.



to add. Click the Add button to add it to the list on the right. Click OK when you're done.

Sorting Messages

You use the Sort option on the View menu to specify which column to use for sorting the list of messages. When you choose Sort, the following dialog box appears:



Click the down-arrow button in the Sort Item By field, then pick the column to sort on and choose either Ascending or Descending order.



Note: If you specify groups as described in the “Grouping Messages” section, you choose sorting within each category on the Group by dialog box.

Grouping Messages

The Group by option (available in the full Microsoft Exchange client) lets you create categories of messages and group similar messages together. You can collapse groups to reduce the number of messages listed in the window, or expand one group to see it and not the others. When you choose Group by, the dialog box shown in Figure 15-11 appears.

The dialog box lets you specify a hierarchy of up to four groupings. You click the down-arrow button to choose a group, then select either Ascending or Descending order. Finally, you can choose to sort the messages in each group by selecting an option at the bottom.

Filtering Messages by Content

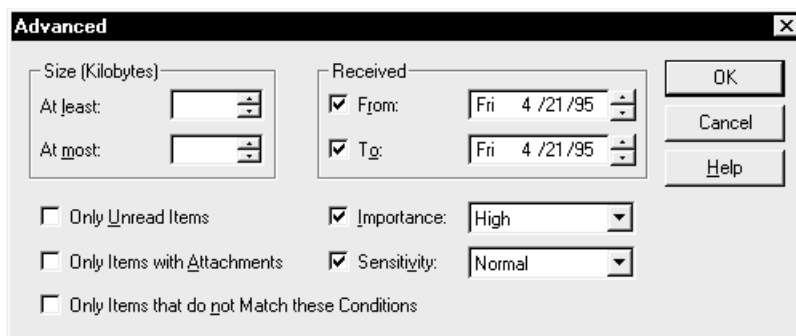
Use the Filter option (available in the full Microsoft Exchange client) to specify the kind of messages you want listed based on their content. Choose Filter on the View menu to display the following dialog box:

The screenshot shows the 'Filter' dialog box with the following fields and options:

- Display only the items in the folder that meet the following conditions:** (Label)
- Folder:** A text box containing 'Inbox'.
- From...:** A text box containing 'Jack Spence'.
- Sent To...:** An empty text box.
- Subject:** A text box containing 'Meetings'.
- Message Body:** An empty text box.
- Options:** Two checkboxes, 'Sent Directly to Me' and 'Copied (Cc) to Me', both of which are unchecked.
- Buttons:** A vertical stack of buttons on the right side: 'OK', 'Cancel', 'Advanced...', 'Clear All', and 'Help'.

Here is how to fill out this dialog box:

- ⇒ Click From or Sent To to specify sender or recipient names.
- ⇒ Type the specific text to filter for in the Subject and Message Body fields.
- ⇒ Click the Advanced button to display the following dialog box, where you can specify message sizes, date ranges, and other information:



The 'Advanced' dialog box is used for filtering messages. It contains several sections:

- Size (Kilobytes):** Two spin boxes for 'At least' and 'At most'.
- Received:** Two checked checkboxes for 'From' and 'To', each followed by a date range (e.g., 'Fri 4 /21 /95').
- Filters:** Three checkboxes: 'Only Unread Items', 'Only Items with Attachments', and 'Only Items that do not Match these Conditions'.
- Importance:** A dropdown menu set to 'High'.
- Sensitivity:** A dropdown menu set to 'Normal'.
- Buttons:** 'OK', 'Cancel', and 'Help' on the right side.

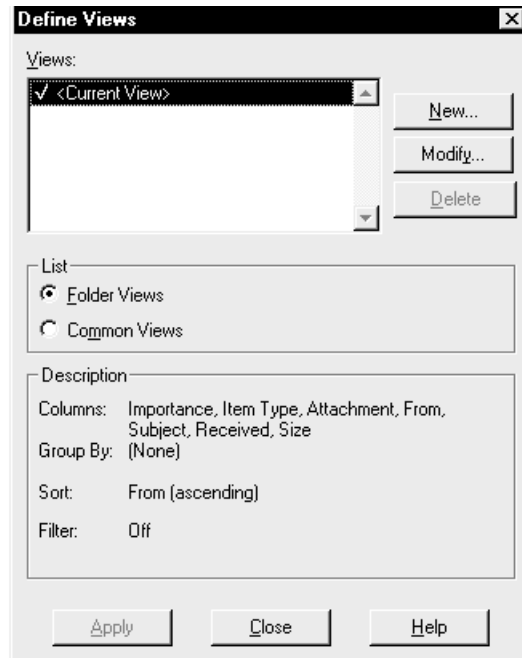
Creating Custom Views

The Custom View option is available in the full Microsoft Exchange client. You create a view as described above, then save it with a name for future use.

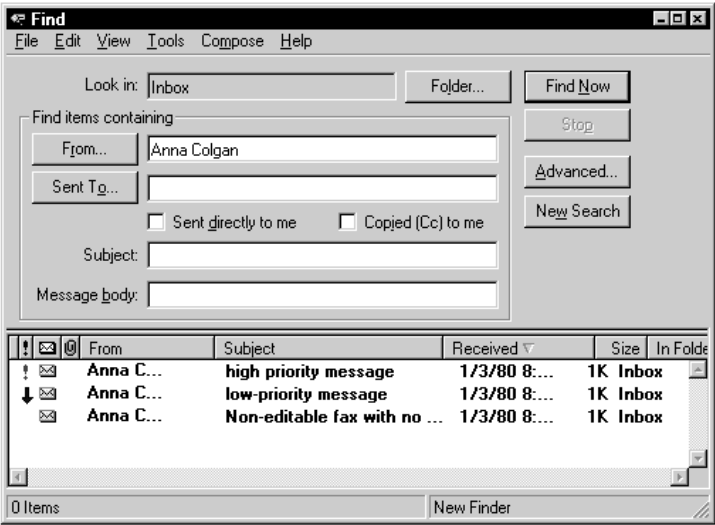
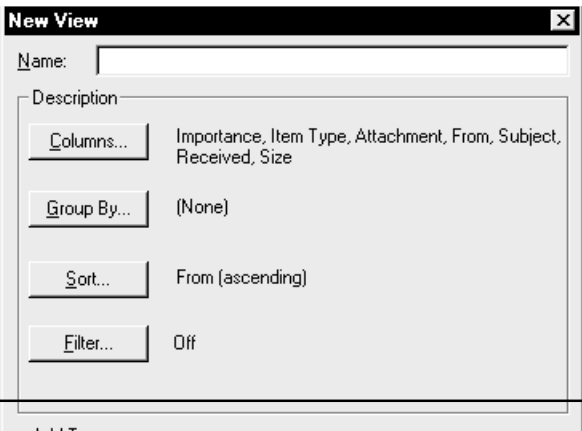


Note: There are *folder* views, which you create for specific folders, and there are *common* views, which you create to work with all folders. To select a view, choose either Folder View or Common View on the View menu, then choose a view.

To create custom views, choose Define Views on the View menu to display the following dialog box:



Click New to create a new view. The following dialog box appears:



Using the Find option to locate messages

Figure 15-12.

Now you can click the Columns, Group By, Sort, and Filter buttons to

When you're done creating the view, choose an option in the Add To field. Click Folder Views if the view you created is for a specific folder. Click Common Views if the view can be applied to all folders.

Finding Messages

If you receive a lot of messages, you'll need to use the Find command to locate messages from specific people or messages related to certain topics. Part of your Exchange housekeeping chores involves deleting and moving messages. For example, you could move messages related to meetings from the Inbox to a special meeting folder. The Find option helps you locate messages with specific content that you want to move, view, or delete. You can search for messages in any folder, including the Inbox.



T.....
ip: Find helps you locate messages in different folders. For example, you could search for a user's name to display a list of messages you've sent the person or received from the person, no matter which folder you put the messages in.

Choose Find from the Tools menu to display the dialog box shown in Figure 15-12. Start by clicking the Folder button and choosing the folder where you want to locate messages. You can choose an entire information store or subfolders within an information store. Click the From and Sent To boxes to specify a sender and recipient. You can also type text in the Subject and Message Body areas, then click the Advanced button to specify date ranges and other information.

Click Start to begin a search. Messages with the information you specified are listed in the lower window of the dialog box. You can double-click any message to view its contents, or perform any other activity normally associated with messages in a message list. For example, you could click one or more messages and copy them to another location or print them.

Working with Information Stores and Folders

You can leave all your messages in the Inbox, but without a little housekeeping now and then, you soon end up with more messages than you know what to do with. Once you've read a message, either delete it or move it to another

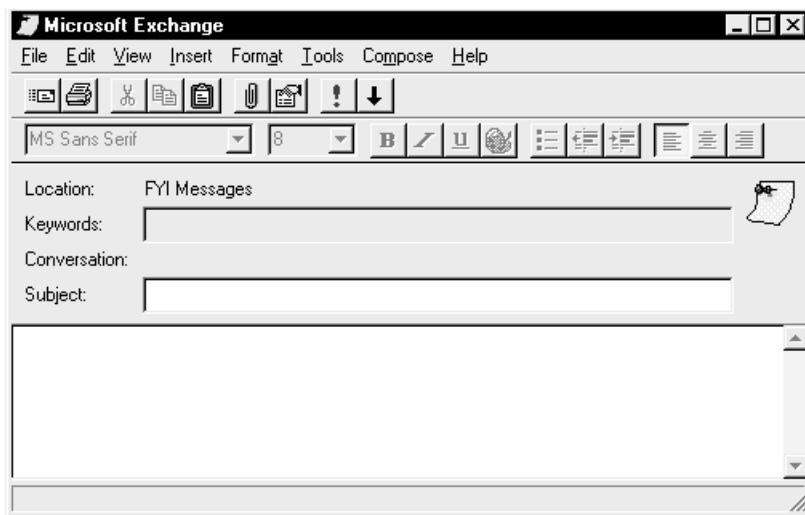
folder. Even deleted messages are held in the Deleted folder for a specific period of time so you can reopen them, if necessary.

Exchange lets you create folders for storing the messages you might need at some future date. For example, if you were working on a court case, you could create a folder called Legal and store all messages related to the case in that folder.

The folder system is hierarchical, and you can use that to your advantage when you store messages. For example, you could create a top-level folder called Board Presentation and create subfolders for each person that you are exchanging messages with concerning the presentation.

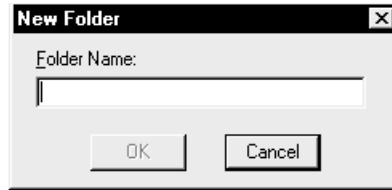
Creating a New Folder

To create a new folder, simply click the information store where you want to add the new folder, then choose New Folder from the File menu. You'll see the following dialog box:



Posting new messages in shared folders

Figure 15-13.



Type a descriptive name for the new folder and click OK.

Once you've created a folder, you can copy or move messages into it. Right-click a message to display its menu, then choose either Copy or Move. Click the destination folder and choose Paste. You can also drag and drop messages from one folder to another.

Storing Messages for All to Read

A *shared information store* is a place where you can put messages that anyone can read. The MS Mail Shared Folder is an example of a shared information store. It is stored on the same computer as your workgroup Postoffice.

Think of shared information stores as electronic bulletin boards. You post messages for others to read and others can post their responses. What you end up with is a running dialog of messages. A shared folder can contain a hierarchy of folders related to many different subjects. For example, a company could have shared folders with messages about the company picnic, jobs available at a new division, and sales postings for various departments. You could even create a classified ad folder.

Posting Messages into Shared Folders

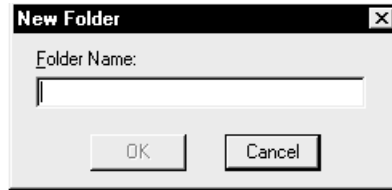
You can copy messages from a personal information store into a shared folder, and you can create new postings as well.

- ⇒ To move an existing message, drag and drop it onto the shared folder.
- ⇒ If you have the full Microsoft Exchange client, you can post directly into a folder by choosing Post in this Folder from the Compose menu. The dialog box shown in Figure 15-13 appears. Fill in the dialog box and click Post from the File menu.

Creating a new posting is not much different from creating any other message. You type a header in the Subject box, then add your message text and attach files or objects, if necessary. You can also include keywords to help other people locate the message in the future.

Once you've created the new message, choose Post on the File menu.

Information Store Options and Properties



Type a descriptive name for the new folder and click OK.

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Once you've created the new message, choose Post on the File menu.

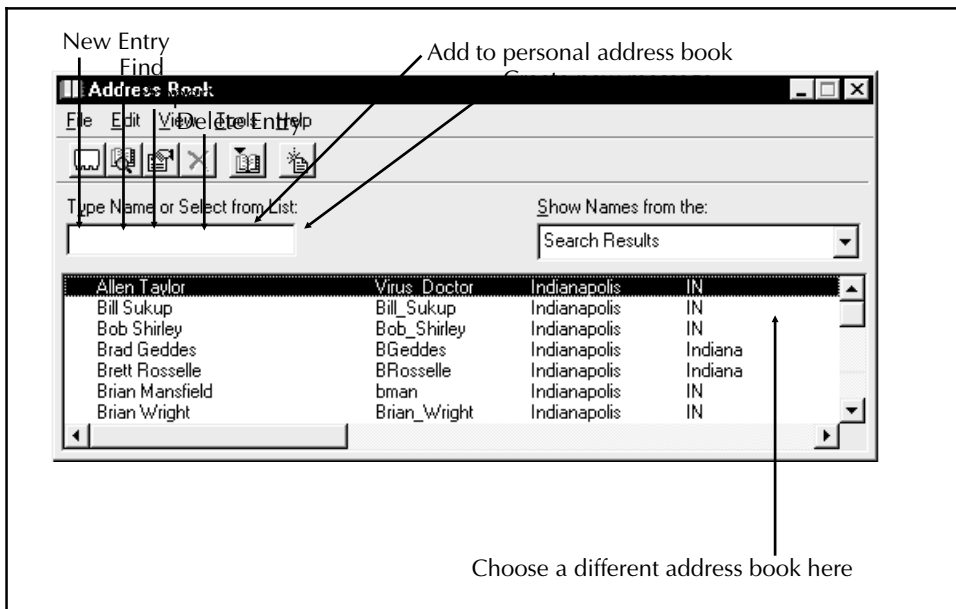
Information Store Options and Properties

If you work with more than one information store, you can choose the one where you want to put all the messages you receive. Choose Options on the Tools menu, then click the Delivery tab to display the following dialog box:



Click the down-arrow button in the top field and choose the information store where new messages should be delivered.

You can change the properties of an information store and even assign it a password. Choose Options on the Tools menu, then choose Services. Select the information store you want to work with in the list, then click Properties to display the Personal Folders dialog box:



The Address Book

Figure 15-14.



Fill in the dialog box as follows:

- ⇒ Change the path and name of the personal information store in the top two fields.

- ⇒ Click Change Password to add a password or change the password that users need to enter to access the information store.
- ⇒ Click Compact Now to compress the information store and save room on your disk.



Note: You can add new information stores or copy existing information stores by opening the Services dialog box. Choose Options on the Tools menu, then click the Services tab and click the Add button.

Keeping Address Books

You can address messages to people on any information service you are connected to, including The Microsoft Network, a company-wide electronic mail system, CompuServe, and the Internet. You can even address messages to fax machines. You can store addresses in your personal address book or obtain addresses from the Microsoft Mail Postoffice, The Microsoft Network, or other sources. This section explains how to add addresses, change addresses, and tell Exchange which address book to display when you want to address messages.

Adding Addresses and Changing Addresses

There are two ways to access or make changes to address books:

- ⇒ Choose Compose New Message, then click the To or Cc button and click New to add a new name or the Properties button to change an existing name you select.
- ⇒ Choose Address Book from the Tools menu.

In either case, you can add new names to the list, edit addresses, or simply choose the addresses where you need to send the message.

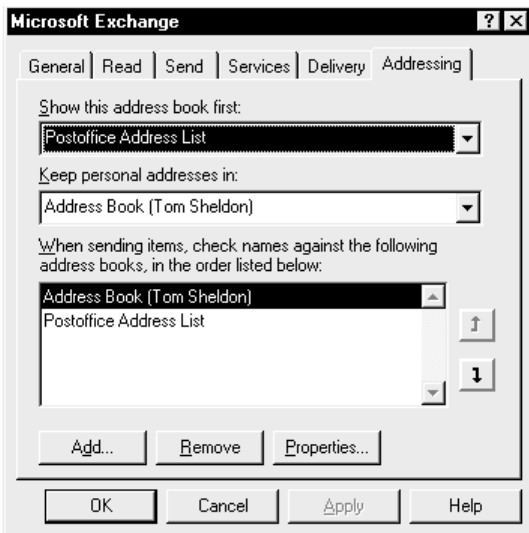
If you choose Address Book from the Tools menu, a dialog box similar to the one in Figure 15-14 appears. For this example, I logged onto The Microsoft Network to view its address list, then chose the Find option on the Tools menu and looked up addresses in Indianapolis. You see a partial listing of these names at the bottom.



Tip: You can copy names from any address book to your personal address book. Highlight a name, then click the Add to personal address book button.

To switch to other address books, click the down-arrow button in the “Show Names from the” field and choose another book.

To add new addresses to your personal address book, click the New Entry button. The following dialog box appears:



Selecting a default address book
Figure 15-15.



Tip: Choose Personal Distribution List in the New Entry dialog box to create groups of message recipients.

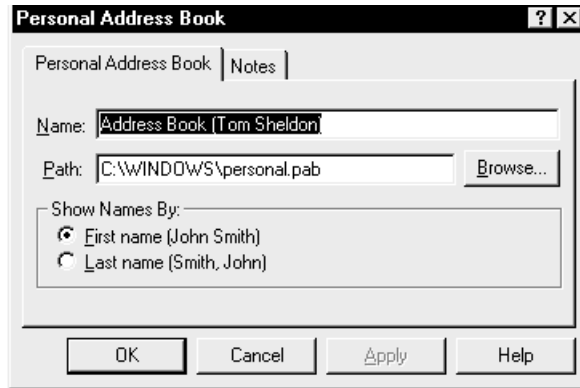
Click the type of entry you want to make, then select an address book at the bottom in the Put this entry field. When you choose OK, a dialog box similar to the one shown here opens so you can fill out information on the new recipient:

Fill out the fields, as appropriate. You must fill out the fields on the New Address tab. You can enter information for your own use on the other tabs. For example, you could enter the recipient's home phone number, company address, title, and so on.

Choosing a Default Address Book

You can tell Exchange which address book to display first when you address messages. Choose Options from the Tools menu, then click the Addressing tab. You'll see the dialog box shown in Figure 15-15. In the top field, click the down-arrow button and choose the address book you want to see first. In the second field, you can specify which address book to store personal addresses in.

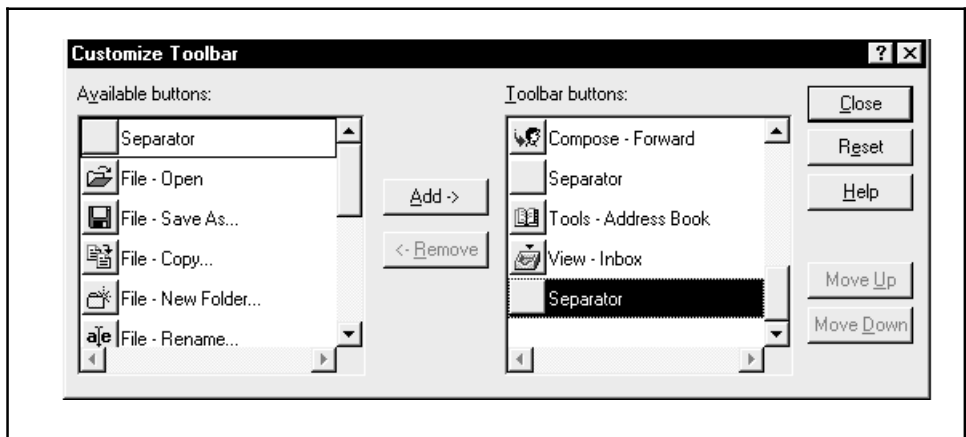
You can change how files are listed in the Personal Address Book and select a different personal address book if it exists. Choose Options from the Tools menu, then click the Services tab. Select Personal Address Book and click the Properties button to display the following dialog box:



Change the filename, path, and name order, as necessary, then click the OK button.

AutoText Entries

Choose the AutoText option on the Edit menu in the full Microsoft Exchange client to create custom text. When you want to insert this “cookie cutter” text in a message, you just choose the AutoText name. For example, you could write disclaimers, security messages, and routing information and insert them in messages. You can even automatically insert text at the end of



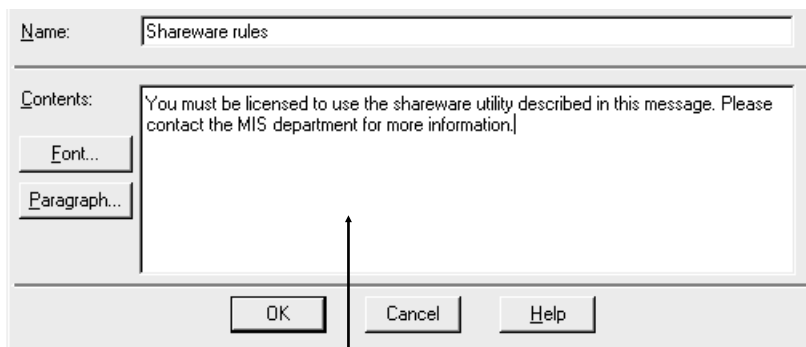
Customizing
the Exchange
toolbar

Figure 15-16.

every message. The following dialog box appears when you choose AutoText on the Edit menu:



Click New to create a New text block. The following dialog box appears:



Type the AutoText text here

Type a name for the AutoText entry, then type the text you want to appear when you insert the AutoText. Click the Font or Paragraph button to change formatting options for the new or selected text.

To insert autotext entries in a message, open the AutoText dialog box, then click a selection and click Insert. You can designate one of the AutoText entries as the default, which makes it easier to insert in your messages. Click it in the Selections box, then click the Set as Default button.



Tip: If you want to add a message to the end of every outgoing message you send, click “Add the Default AutoText to the End of Outgoing Messages” at the bottom of the AutoText dialog box. For example, you can create default AutoText that includes your phone number and electronic mail addresses.

Customizing the Exchange Toolbar

You can specify which buttons appear on the Exchange toolbar. Choose Customize Toolbar from the Tools menu. The dialog box in Figure 15-16 appears.

The procedure for customizing the toolbar is simple. Existing buttons on the toolbar are listed in the box on the right.

- ⇒ **Removing buttons** To remove a button, click it in the right pane, then click Remove. This makes room for the button you want to add.
- ⇒ **Adding buttons** To add a new button, click it in the left pane, then click the Add button.

Choose Separator in the left pane to add a blank space that separates two buttons for organizational purposes. When you’re done, click the Close button. You can click Reset if you want to return to the normal, default toolbar.

Changing Your Password

You can change the password you use to log on to Microsoft Mail. Choose Tools for Microsoft Mail from the Tools menu, then choose Change Mailbox Password from the cascading menu. The following dialog box appears. Fill in the blanks, then click OK.

Change Mailbox Password

Old Password:	<input type="text"/>	OK
New Password:	<input type="text"/>	Cancel
Verify New Password:	<input type="text"/>	Help



Tip: If you forget your Mail password, see the Postoffice administrator. He or she can assign you a new password by opening the Microsoft Mail

Postoffice utility in the Control Panel. You can then change the password by following the steps above.

The Windows 95 communication services go far beyond the electronic mail services discussed in the last chapter. You can send and receive faxes, communicate with bulletin boards and online services, and control telephone equipment and fax modems, all of which are discussed in this chapter.



Note: Refer to Appendix C if you need to install and configure a modem or fax modem.

Introducing the Telephony Interface

Using the Windows 95 telephony interface, Windows 95 applications can control the communication devices that handle voice calls, data transmissions, and fax transmittals. The official name for the interface is TAPI, which stands for Telephony Applications Programming Interface. TAPI manages the control signals that travel between your computer and the telephone network. Essentially, TAPI merges the telephone and the computer. As a Windows 95 user, you don't need to know how TAPI works, just that it opens up your computer to new communication devices and functions. Here are some examples of what you can do with the appropriate software and equipment:

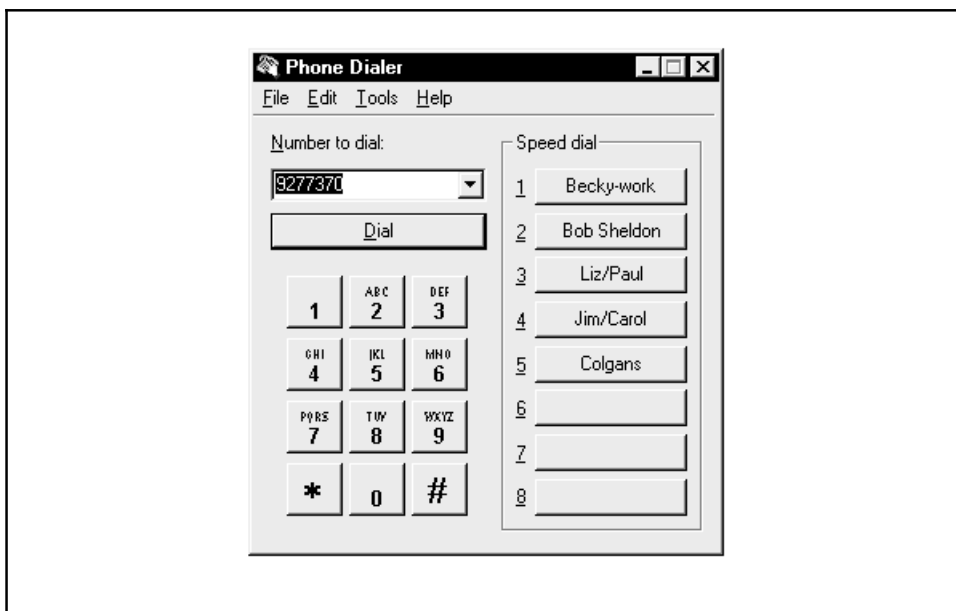
- ⇒ Set up and terminate voice, data, and fax calls from Windows 95. For example, you could record a voice message and have your TAPI application send the message to the telephone numbers of people or other computers stored in a database.
- ⇒ Set up and maintain a teleconference. There is software available that can schedule a teleconference and set it up automatically.
- ⇒ Put calls on hold, get call waiting, and identify callers. You can use your mouse to send or respond to telephone signals, or have an application do it for you.

The Windows 95 Phone Dialer, pictured in Figure 16-1, is a good example of an application that employs TAPI.

Phone Dialer uses the modem to dial a telephone number, then releases the phone to you so you can talk. Phone Dialer has all the features of a telephone with a built-in speed-dialer. Even if your telephone already has a speed-dialer, you might find the Phone Dialer's easier to use than the one on

Phone Dialer is a TAPI-based application

Figure 16-1.



your telephone. It's right there on the Windows 95 interface where you do most of your work.

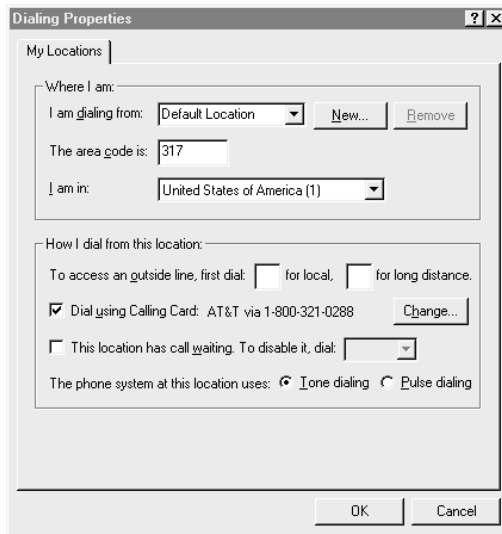
The Dial Helper

Besides Phone Dialer, other Windows 95 applications take advantage of TAPI and the modem, including HyperTerminal, Microsoft At Work Fax, The Microsoft Network connection, and the remote networking features. However, before you can use a TAPI-based application, you have to tell Windows 95 about your phone line. You have to tell it where you're calling from and how you dial your phone, among other things. These settings are made on the generic Dialing Properties dialog box pictured in Figure 16-2.

The main purpose of this dialog box is to help you create dialing strategies and configurations for different locations, such as when you're dialing in your office or when you're dialing from a hotel or client site. For example, you can create a dialing location called "office" that dials 9 to access an outside line, a second dialing location called home that disables call waiting, and a third dialing location called "client site" that specifies the client-site's area code and uses a calling card number when dialing out.

Because several Windows 95 applications and accessories use the Dial Helper, you can access it in several places. For example, you can open it when connecting to an online service, setting up a remote dial-up

The Dialing Properties dialog box
Figure 16-2.



connection, or sending a fax. However, the most obvious access point is the Modems utility. Open the Control Panel, double-click Modems, and click the Modem Properties button. The dialog box in Figure 16-2 appears.

To create a new dialing configuration for your home, your office, or for dialing on the road:

1. Click the New button.
2. In the dialog box that appears, type a name appropriate for the dialing configuration, such as “home,” “work,” or “client site,” then click OK.
3. Fill out the remaining options in the Dialing Properties dialog box as appropriate for the location where you will be dialing. They are described next.

The Where I am field is where you specify a dialing location. Click the New button, type a name that describes the new location (such as “home” or “office”), and a different area code and access area, if necessary.

The “How I dial from this location” field lets you specify access codes and calling card information, as follows.

➡ Type a local or long distance access code in the top two fields.

- ⇒ Click “Dial using Calling Card” if you want to bill calls to your calling card. A dialog box similar to the following appears:



Click the down-arrow button to choose existing calling card information or click the New button to create a new calling card. Click OK when done to return to the Dialing Properties dialog box.

- ⇒ If the location has call waiting, click the “This location has call waiting” field and type the code you use to disable it. For tone-dial phones, type ***70** in most cases or check with your phone company. Also note that call waiting is restored after the session.



T ip: If you use your voice-call line to connect with an online service and the line has call waiting, the call-waiting tone can disrupt the link and abruptly end your online session. Be sure to disable call waiting before going online, especially if you plan to download large files.

- ⇒ Specify tone or pulse dialing depending on the type of equipment you have.
- ⇒ In some cases, you’ll see a field called “Dial as a long distance call.” You might need to enable this field, depending on your location.

How Transmissions Are Sent with the Microsoft At Work Fax Utility

Windows 95 has built-in fax services so you can exchange faxes with others on a network or anyone in the world who has a fax machine. In Windows 95, a fax is treated like an electronic mail message in Microsoft Exchange.

You can address a fax machine in the same way you address a message to an e-mail recipient.

At Work Fax is extremely flexible. It supports the Binary File Transfer (BFT) and Rendering protocols, so you can attach files to faxes and transmit them between systems that run Windows 95 or Windows for Workgroups 3.11, as well as devices that support Microsoft At Work Fax. Here is how other systems treat Microsoft At Work Faxes:

- ⇒ When you send a fax to another Windows 95 computer that has a built-in fax-modem, the fax is received in the Inbox as an electronic file. From there, the recipient can open and edit it.
- ⇒ When you send a fax to a fax machine, the machine prints the fax as if it were a normal fax transmission.
- ⇒ You can attach files to faxes in the same way you attach files to e-mail messages. When the receiving machine is a Windows 95 computer, the file is received as a file. When the receiving machine is a fax machine, the file is rendered and printed.

A fax-modem doesn't have to be installed in your computer to send faxes. If you are connected to a network and another computer on the network has a fax-modem that is shared, you can use the fax-modem as if it were attached to your own computer. See "Sharing Your Fax with Network Users" later in this chapter.



Tip: If you don't have a scanner and you need to get a graphic image like a photograph in your computer so you can insert it in a document, just find a fax machine and fax the picture to your computer. You can use the Fax Viewer—described later in this chapter—to crop the image, and then you can cut and paste it into one of your documents.

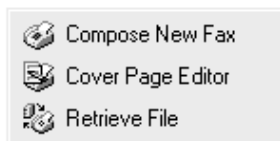
Where Fax Options Are Located

If you've been exploring the Windows 95 interface, you've probably found fax options just about everywhere you've looked. Not having all the fax options in a central place is a little confusing to some people, but the idea is to make it easy to fax documents from any location.

Here are the ways you can send a fax. Each method basically produces the same results:

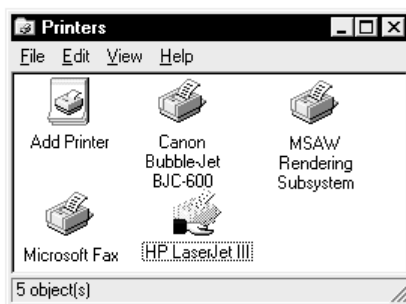
- ⇒ Open Microsoft Exchange and choose New Fax on the Compose menu.

- ⇒ Choose the Send option on Windows 95 applications like WordPad to open Exchange.
- ⇒ Drag and drop a document onto an object that represents the fax modem in your own computer (choose Settings on the Start menu, then Printers) or the shared fax modem on another network computer (look in Network Neighborhood).
- ⇒ Open the Start menu, then click Programs, Accessories, and Fax to see the following options for composing a new fax, editing fax cover pages, and retrieving fax files from an information service:



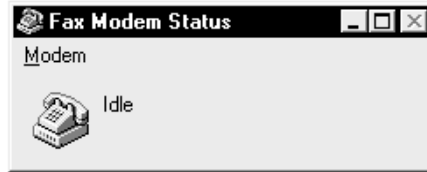
Note: Open the Mail and Fax utility in the Control Panel to change the properties of your mail system and fax modem.

You'll also find a Microsoft Fax object in your Printers folder, as shown here:



The Printers folder is located in the My Computer window. For convenience, you can put a shortcut to this fax object on our desktop by right-clicking it and dragging it over the desktop.

Once the fax is installed and Microsoft Exchange is up and running, you see a fax-modem icon in the Taskbar. The Fax Modem Status dialog box appears if you click the icon.



The Fax Modem Status dialog box shows the status of the fax-modem. You can choose options on the Modem menu, including Answer Now to pickup an incoming fax call, Hang Up to abort a connection, and Properties to set fax options. The Properties option is discussed later in this chapter.

Addressing a Fax

You can directly address faxes when composing messages in Exchange, or you can use the Fax wizard, which is described in the next section. To directly address a fax, simply type an address in the To: or Cc: field of Exchange's compose message (see Chapter 15 for details). When you type an address this way, Exchange knows automatically that the message is a fax and the message is prepared for transmission through the default fax machine (local or network).

The address can coexist in the To: or Cc: field with other types of addresses, as shown here:



In this illustration, the first address is a Microsoft Mail address, the second is an Internet address, and the third is a direct fax phone number.

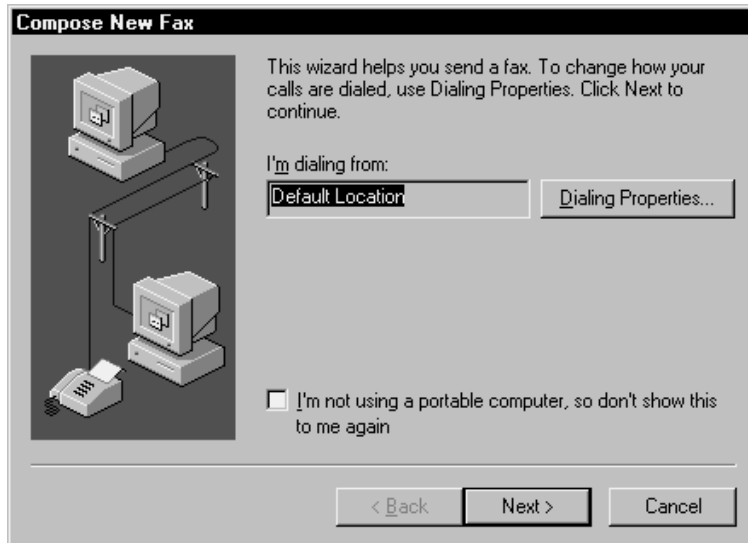
The Fax Wizard for Sending Faxes

You can also address a fax with the Fax wizard. Choose New Fax from Exchange's Compose menu. As shown in Figure 16-3, the Fax wizard starts up to help you address and create a new fax.

Click Next to continue and see the dialog box shown in Figure 16-4. You can type a name or you can click the Select button to insert a name and fax number from an address book. If you are typing a name, fill out the Fax #

The Fax
wizard

Figure 16-3.



field as well, then click the Add to Recipient List button. You can send the fax to more than one party by repeating this step.

Specify one or
more
recipients in
this dialog box
Figure 16-4.



After you've created the recipient list, click the Next button. The dialog box shown in Figure 16-5 appears. This is where you can select a cover page and set special options. Windows 95 includes several cover pages that automatically include your name and return fax number, but you can create your own cover pages by referring to the section called "Sending Cover Pages with Faxes" later in this chapter.

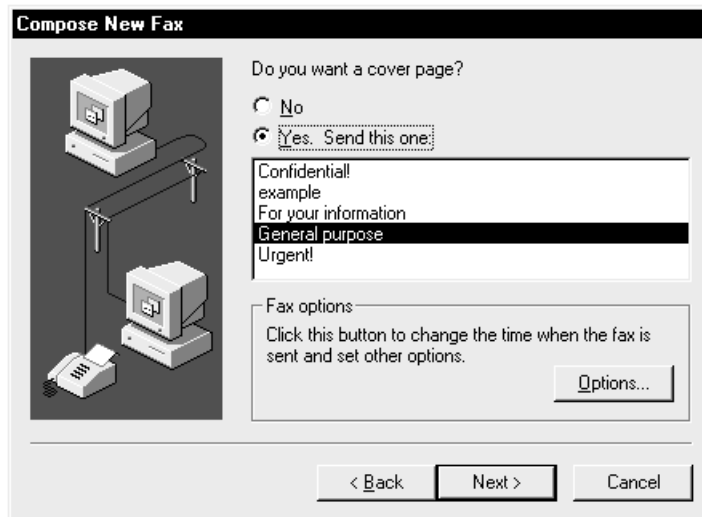
If you click the Options button, the Message Options dialog box shown in Figure 16-6 appears. From here you can set important fax features for the fax transmission, as discussed next.

Fax Transmission Options

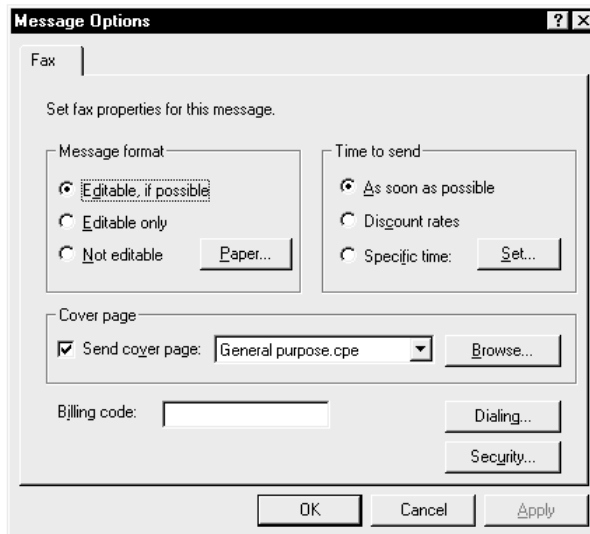
The Message Options dialog box pictured in Figure 16-6 is where you set special options for sending faxes, as discussed in the next sections. When you're done settings these options, click OK on the Message Options dialog box to return to the Fax wizard as pictured in Figure 16-5, then go on to the next section "Finishing Up Your Fax."

Specify a cover page or set options in this box

Figure 16-5.



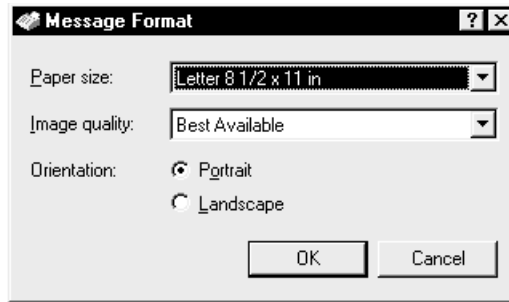
Set special options in this dialog box
Figure 16-6.



Choosing How to Send a Fax

You can send faxes as editable documents to other Windows 95 workstations or as rendered documents. The Message Format options are described here:

- ⇒ **Editable, if possible** Click this option if the receiving fax system supports the Microsoft binary fax protocol. This protocol allows fax information to be transmitted as data rather than rendered graphic information. Basically, recipients receive editable files that can be loaded and edited in a word processor or other application. If the receiving fax system does not support the protocol, the fax is sent as a normal rasterized (graphic) fax.
- ⇒ **Editable only** Choose this option to send the fax as an editable document. Do not choose this option if there is any chance that the receiving system is a conventional fax machine.
- ⇒ **Not Editable** Choose this option to send the fax as a normal rasterized graphically imaged document. The document is rendered this way even if the receiving machine supports At Work Fax. If you click the Paper button next to this option, you see the following dialog box. From here you can specify paper size, image quality, and orientation:



Choosing When to Send a Fax

You can choose when to send the fax by setting an option in the Time to send field:

- ⇒ **As soon as possible** Sends the fax as soon as you finish creating it.
- ⇒ **Discount rates** **Sends the fax during discount rate times.**
- ⇒ **Specific time** Sends the fax at a specific time. Click the Set button to specify the time.

Choosing a Fax Cover Page

To send a cover page with the fax, click the Send cover page option and either choose a cover page from the list or click the Browse button to search for a cover page. You can edit a cover page you've already created or create a new one. See "Sending Cover Pages with Faxes" later in this chapter.

Dialing Options for Sending Faxes

Click the Dialing button at the bottom of the Message Options dialog box (see Figure 16-6) to see the dialog box shown in Figure 16-7. Here, you specify dialing information like prefixes and dial-out codes based on your current location, toll prefixes, and the number of retries.

Click Dialing Properties to select a different dialing location, create a new one, or just set dialing properties for this fax. Refer to "The Dial Helper" earlier in this chapter for details on how to fill out the Dialing Properties box.

Click OK to close the Dialing Properties dialog box and click OK again to close the Dialing dialog box. You're returned to the Message Options dialog box (see Figure 16-6).

Setting Security Options

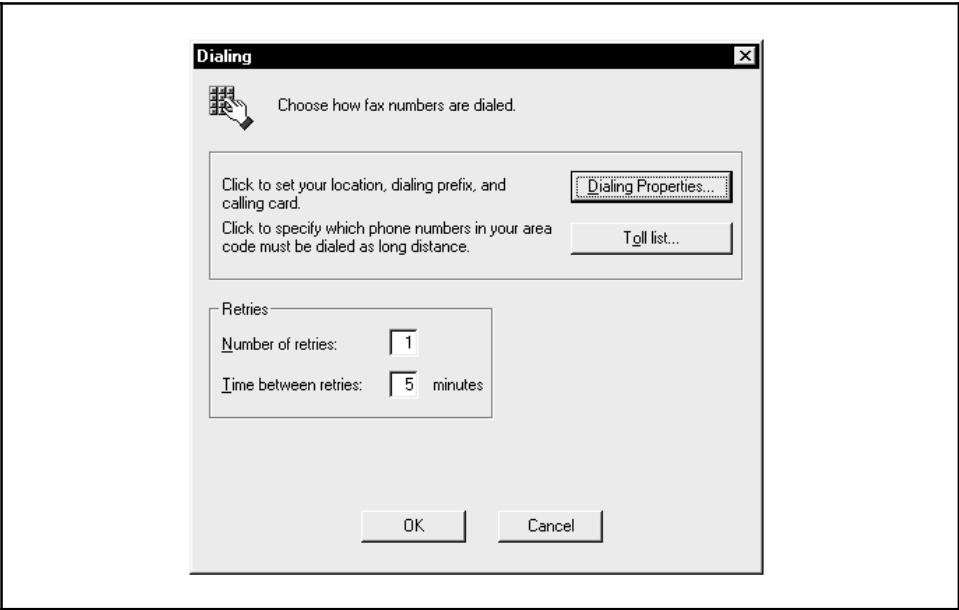
Click the Security button if you want to choose security and encryption options for your fax transmission. You see the following dialog box:



Refer to “Fax Security Issues and Options” later in this chapter for the details on filling out this box.

Finishing Up Your Fax

After you’re done specifying options for the fax, you’re returned to the Fax Wizard dialog box as shown in Figure 16-3. Click the Next button. Figure



Dialing options for faxes

Figure 16-7.

16-8 shows the dialog box that appears next. This is where you type the subject and text for your fax. The information you type here appears on the fax cover sheet.

Click Next after you type the subject and message for the text to see the dialog box pictured in Figure 16-9. This is where you can attach a file to the fax message.

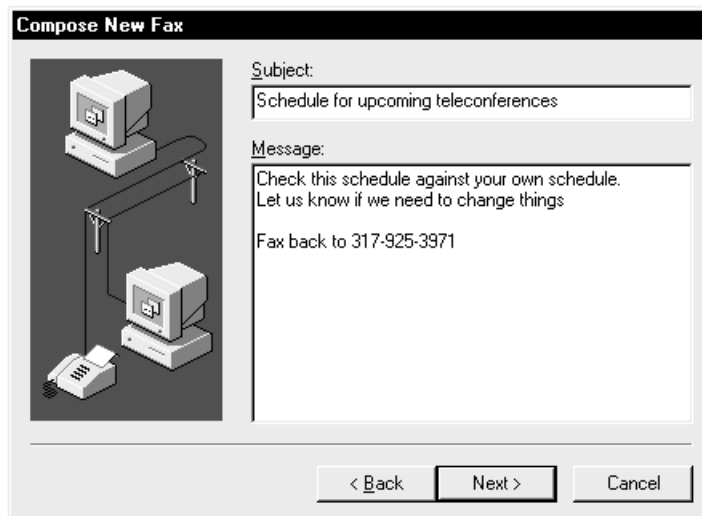


Note: If you attach a file to a fax and send it to a system that does not support the Microsoft binary fax protocol, the file is rendered as a graphic image and is not sent as a data file.

If you click the Add File button, you'll see a dialog box for selecting a file to send with the fax. You can add more than one file to a fax. Files appear as icons in the text area of the dialog box.

When you're done attaching files, click Next to complete the fax. You can choose a different dialing location if necessary before clicking the Finish button to send the fax.

If the fax is going to a user in your workgroup, it is sent directly through the Microsoft Mail Postoffice. An actual fax machine doesn't need to be involved in the transmission. If the fax is going to an outside system, the fax modem

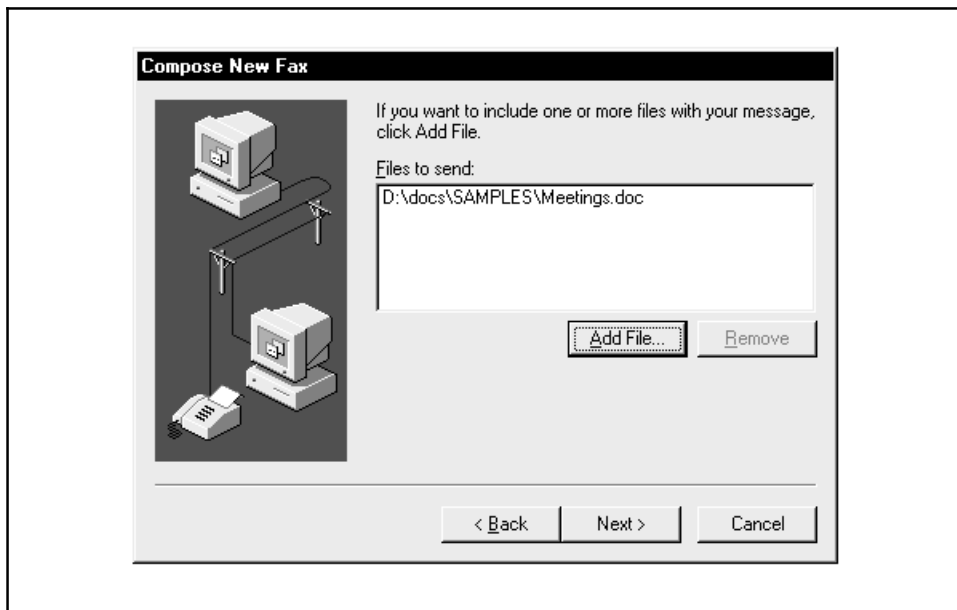


Subject and message area for a fax

Figure 16-8.

Attaching files
to faxes

Figure 16-9.



icon in the Taskbar changes. Click it to monitor messages and fax status, as shown here:

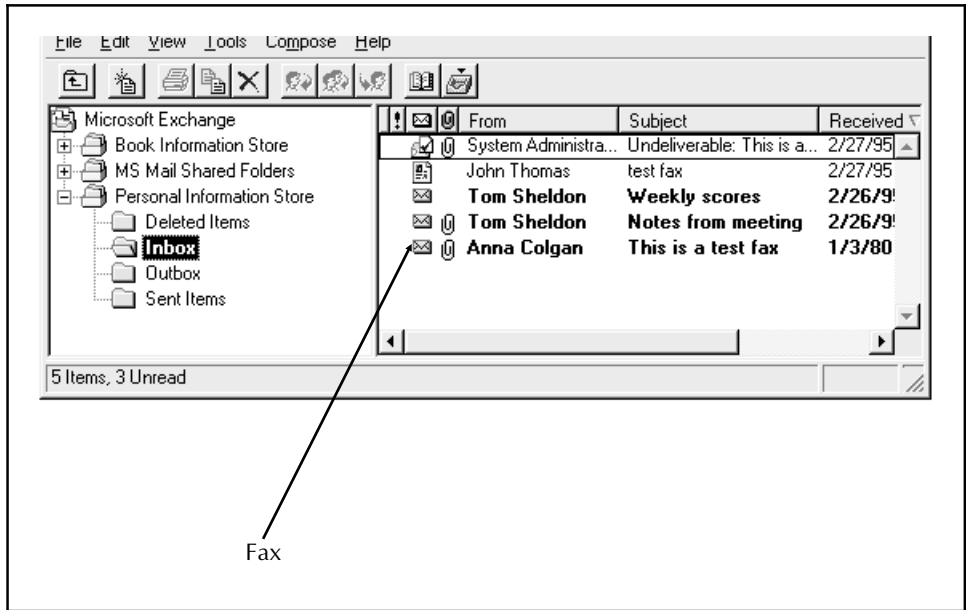


Note: If a line is not available to send a fax, the fax is placed in the Outbox and sent the next time a connection is available.

Viewing Faxes You've Received

When faxes arrive at your computer, a message box pops up to tell you so. You can view faxes immediately or wait to view them later. If you wait, the fax appears in Microsoft Exchange Inbox as a fax or a message, depending on whether the fax was sent as an editable or noneditable object. In Figure 16-10, the page icon tells you that the fax from John Thomas is a noneditable fax.

Viewing
received faxes
and messages
Figure 16-10.



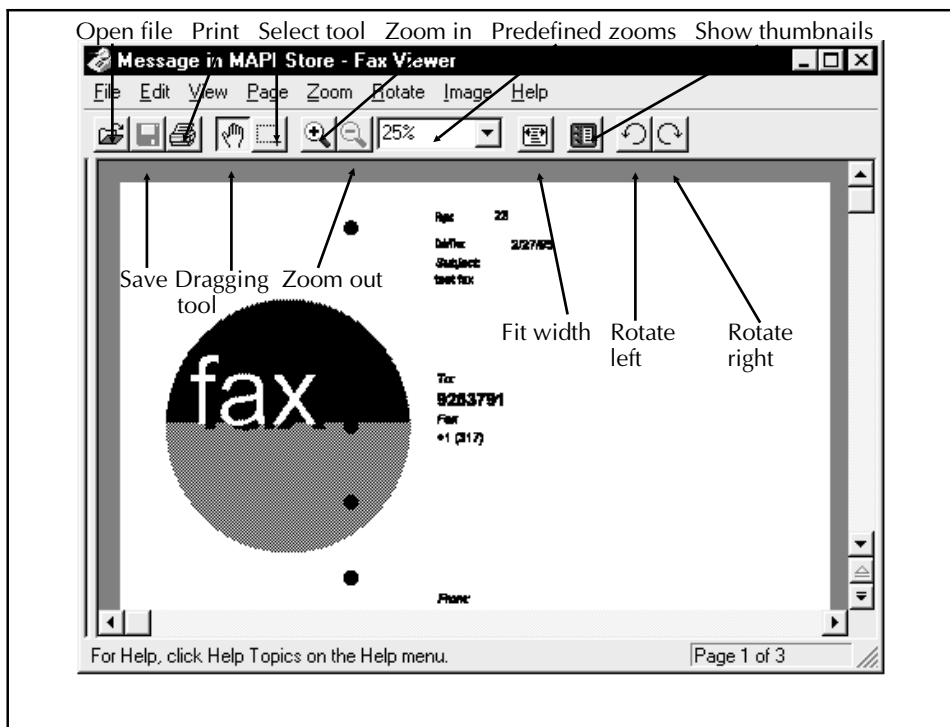
Editable faxes from other At Work Fax systems can be read like Exchange messages. Noneditable faxes appear in the Fax Viewer, which is described next.

Using the Fax Viewer

If you receive a rendered fax, just double-click it to open the At Work Fax Viewer. The Fax Viewer, pictured in Figure 16-11, is a utility for viewing rendered faxes. The faxes you see in the Fax Viewer are graphic images, so you can work with them in much the same way you would work with a picture in Windows Paint. You can zoom in on parts of a fax, scroll through the pages, select part of the fax and copy it elsewhere, and rotate the image at 90 degree angles.

The buttons on the Fax Viewer toolbar let you do almost everything you need to do in Fax Viewer. Some of these tools are described here.

- ➡ **Dragging tool** Click this tool, then click the fax page and drag it around. The fax page moves in the window. Using this tool is easier than using the scroll bars.



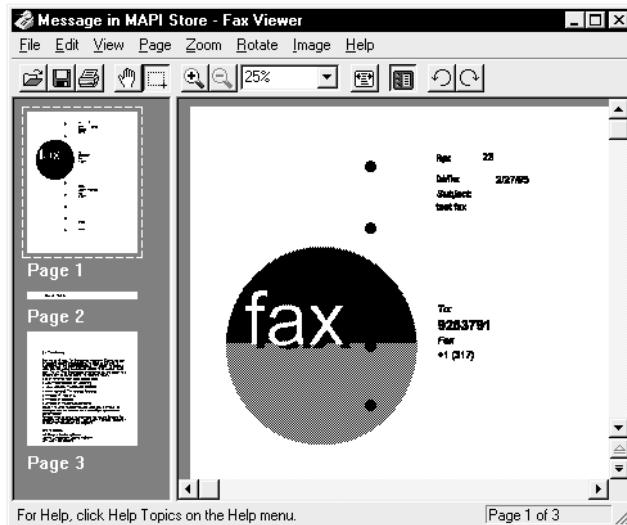
The Fax
Viewer

Figure 16-11.

- ⇒ **Select tool** Use this tool to select a part of the fax you want to copy to the Clipboard and paste elsewhere.
- ⇒ **Zoom in/Zoom out** Use these tools to zoom in or out of the fax page. Simply click the area you want to zoom in on.
- ⇒ **Fit width** Click this button to make the fax page fit in the current window.
- ⇒ **Show thumbnails** Click this button to view thumbnail pages of the fax, as shown in Figure 16-12. Use the dragging tool on the left to page through the document.
- ⇒ **Rotate left/Rotate right** Rotates the fax so you can orient it for printing or select part of the image and copy it elsewhere.

Viewing a thumbnail sketch of the fax

Figure 16-12.



Note: Besides using the Rotate left and Rotate right tools, you can also choose Flip over on the Rotate menu and Invert on the Image menu.

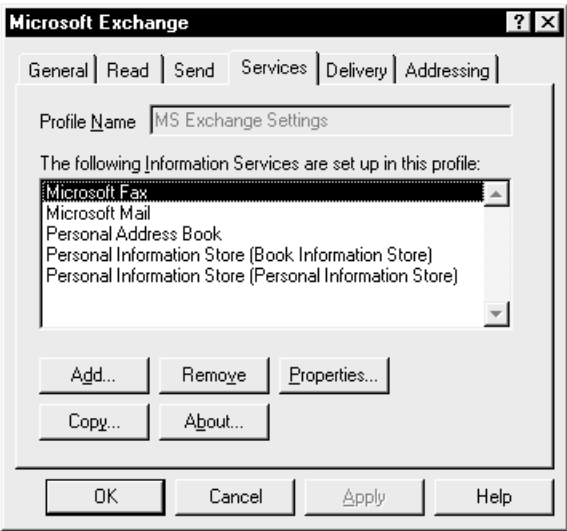
Choosing Default Parameters for Faxing

The Properties dialog box for At Work Fax is where you set the default parameters for faxing. Keep in mind that you set default options for all faxes so you don't have to set the options every time you create a new fax. However, you can stray from the defaults on a fax-by-fax basis.

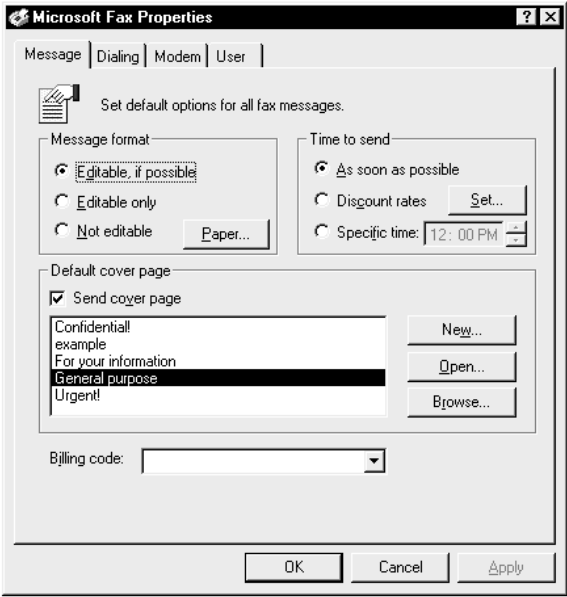
You can access the Properties dialog box for At Work Fax by using either of these methods. Both basically get you to the same place.

- ⇒ Open the Mail and Fax utility in the Control panel, then choose a profile and click the Properties button.
- ⇒ In Exchange, choose Options on the Tools menu, then click the Service tab.

Either way, you see a dialog box similar to the following:



Select Microsoft Fax and click the Properties button. Now you see the Microsoft Fax Properties dialog box shown in Figure 16-13. This is where you change the default settings for all faxes.



Where to change default fax options
Figure 16-13.



Note: The options on the Message tab and Dialing tab are described in “Fax Transmission Options” earlier in this chapter. Information about modems is discussed in Appendix C.

If you click the User tab, you can set name, address, and phone number information for the fax user in the current profile. Most of the other information you specify on this dialog box is for your own use and is not used directly by the fax system.

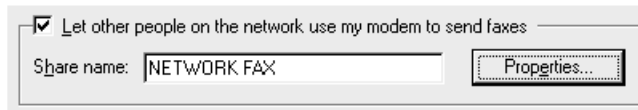
Faxing on a Network

If your computer is connected to a network, you can let others send faxes through your machine. You can also send faxes through a “shared” fax-modem on the network.

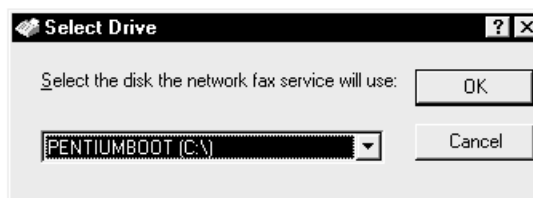
Sharing Your Fax with Network Users

You can share your fax with other users on a network, and access a shared fax on a network as well. To share your fax with others, you open the same Properties dialog box you opened in the previous section to choose faxing defaults:

1. In Exchange, choose Options on the Tools menu to open the Options dialog box, then click the Services tab.
2. Select Microsoft Fax, then click Properties to open the Microsoft Fax Properties dialog box pictured in Figure 16-13.
3. Click the Modem tab. Look for the following field in the dialog box and click the checkbox labeled “Let other people on the network use my modem to send faxes”. (Notice the Properties button, as well.)



4. A dialog box similar to the following opens so you can specify which drive to use for storing faxes. Click OK to use the listed drive, or click the down-arrow button to select another.



Sharing a fax
modem on
your system
Figure 16-14.



If you click the Properties button next to the Share name field, the dialog box shown in Figure 16-14 opens. This is where you change the share name and access type for the fax modem. You can also enter a password that other users must type in order to access the fax modem.



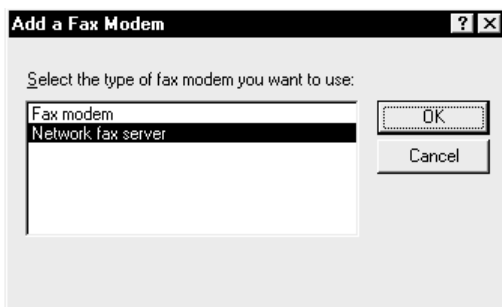
Note: If you want to stop sharing your fax modem, click the Not Shared button in the NetFax dialog box.

Accessing a Network Fax Modem

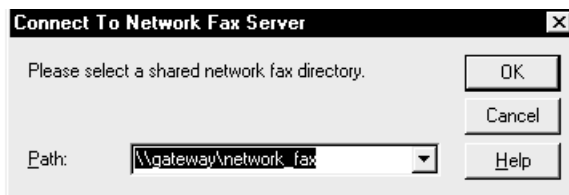
16

If a fax modem on another network computer has been shared using the procedure described above and you want to access it, follow these steps:

1. In Exchange, choose Options on the Tools menu to open the Options dialog box, then click the Services tab.
2. Select Microsoft Fax, then click Properties to open the Microsoft Fax Properties dialog box (see Figure 16-13).
3. Click the Modem tab.
4. In the Available fax devices field, click the Add button to display the following dialog box:



5. Choose Network fax server and click OK to display a dialog box similar to the following:



6. Type the path and name of the fax modem in the Path field, then click OK.

If you're not sure what the path and network names are, ask your system administrator. Once you access the shared modem, it becomes available in your list of modems to use.

Fax Security Issues and Options

At Work Fax offers extensive fax security options so you can send and receive confidential fax documents. You can see to it that only the recipient of a fax reads the information you send. You can also implement "digital signatures" to verify the authenticity of documents. Digital signatures are important for contracts, invoices, and other business documents for these reasons:

- ⇒ The recipient knows that a document is from the person it says it's from, rather than from an impostor.
- ⇒ The recipient knows that the document wasn't altered by someone else or corrupted during transmission.

- ⇒ The sender can't "deny" sending the document (to back out of a contract, for example) because the digital signature proves that the document came from the sender.

There are two methods for securing fax transmissions, *simple password protection* and *public/private key encryption*. The first is easiest to use. You simply "lock" a fax with a password, then give the password to the recipient, who uses it to "unlock" the fax when they receive it.

Simple Password Protection

You don't need to set up anything in advance to use simple password protection. While you're composing a message, choose Send Options from the File menu, then click the Security button. You'll see the dialog box shown in Figure 16-15.

Click Password-protected and then click the OK button to display the following dialog box:



Fill in the fields and click OK. Passwords can include upper- and lowercase letters, so you need to give the password to the recipient *exactly* as you typed it.



Caution: Don't type sensitive information in the Subject field of the fax transmission, since this field is not encrypted in the transmission.

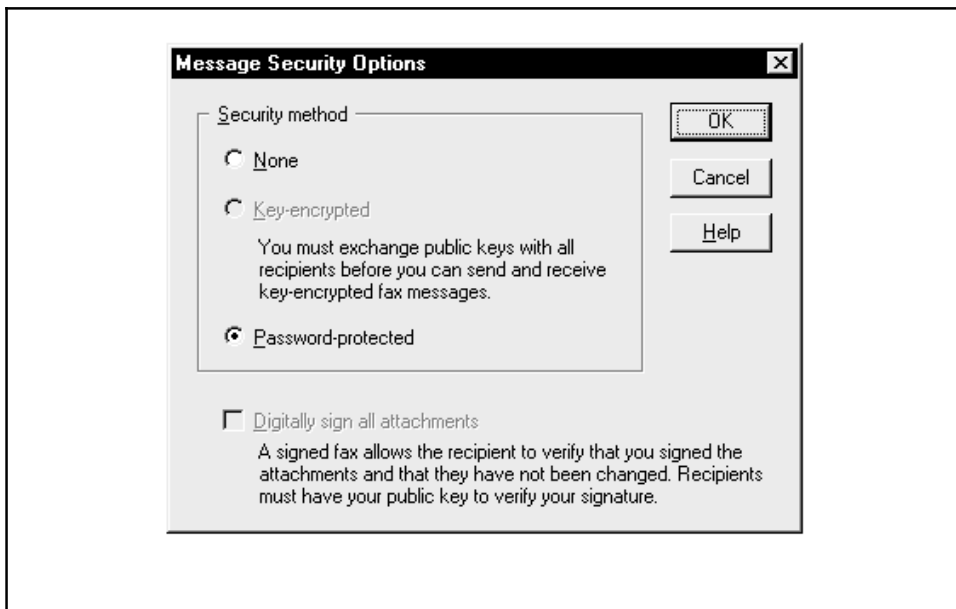
16

Key Encryption Protection

The public/private key encryption system consists of a *public key* and a *private key* that are used to encrypt documents before they are transmitted and unencrypt them after transmission. The public key is available to everyone; you hold the private key. People who want to send you secure documents

Using the password method of securing fax transmissions

Figure 16-15.



encrypt them by using your public key. When you receive the document, you unencrypt it with your matching private key.



Note: The public key and private key are generated at the same time by using the same password and user information. They are linked together to provide a unique two-way security system.

The beauty of this scheme is that you don't have to worry about exchanging passwords with other users. A password can be compromised if you send it through the mail, by fax, or even pass it along in a phone conversation. It can also be compromised if the person you gave it to gives it to someone who should not have it. However, by maintaining two linked passwords, one that is available to anyone and one that is held privately, the key encryption system greatly simplifies security issues. Now anyone can send you an encrypted document by locking it with your public key. Only you can unlock it with your private key.

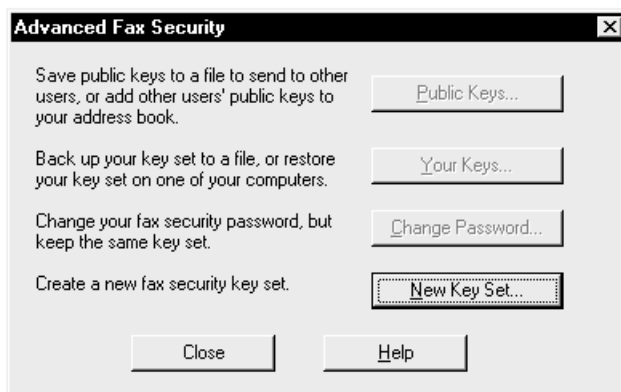
Similarly, you can lock outgoing messages with your private key so that anyone with your public key can unlock them. This is the essence of digital signature. If you lock a message with your private key, the contents of the message are "frozen" and cannot be altered without detection. In the same way, locking a message with a private key "locks down"

information—including the sender's name, date, and other information—that the recipient can use to prove that the sender actually did send the message. The sender's public key is the only key that can properly unlock the message, so the recipient has proof that the message is authentic.

If you decide to use key security, you need to generate a set of public and private keys, then exchange the public key with other people. Likewise, to send encrypted messages to other users, they have to send you a copy of their public keys. To make this simpler, a network administrator could create a public directory where users place their public keys for anyone to access.

To set up key security, follow these steps:

1. Start Microsoft Exchange, then choose Microsoft Fax Tools on the Tools menu and Advanced Security on the cascading menu. You'll see the following dialog box:



2. Click the New Key Set button. The following dialog box is displayed:



3. Fill in the blanks and click OK.

Your key set is generated by using information from your logon password and other sources. Now you're ready to share your public key with others.

Sharing a Public Key with Others

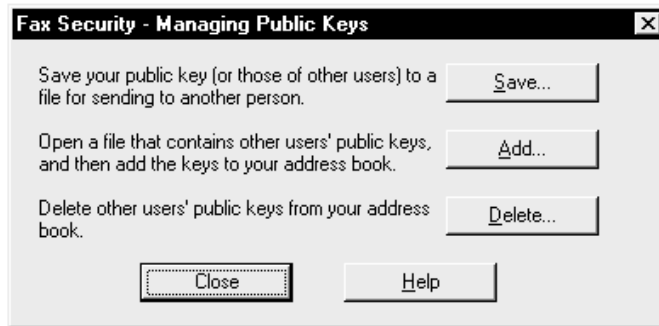
You must have the public keys of other users to send them encrypted messages. Other users, meanwhile, must have your public key to encrypt messages before they send them to you. In addition, if you plan to digitally sign messages, other users need your public key to open the messages.



Tip: The key exchange process involves copying your key to a floppy disk so you can send it to other users. You can also copy the keys to a public folder on a network. If you already have the public keys of other users on your computer, you can save them in the file as well in order to distribute them to other people, assuming that doesn't compromise security.

To share your public key with other people, follow these steps:

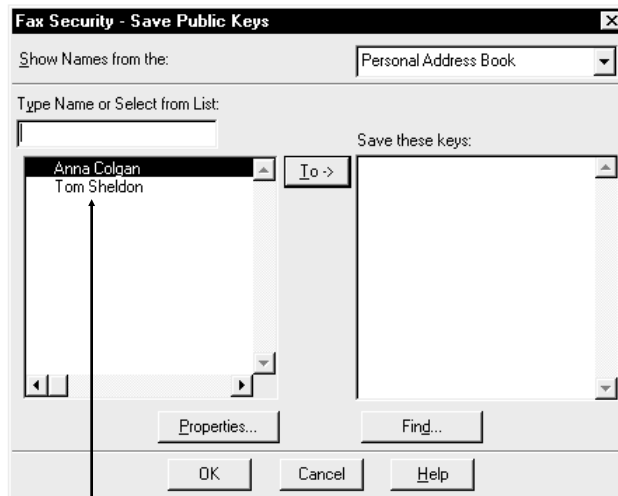
1. Click the Public Keys button on the Advanced Fax Security dialog box pictured earlier to open the following dialog box:



2. Click the Save button to open a dialog box similar to the one shown in Figure 16-16. Pick your name from the list and click To. If you already have the public keys of other users, they appear in the left pane as well. To include other users' public keys in the file you are creating, click their names and click the To button.
3. Click OK to open the standard File Save dialog box, then specify a name and location where you want to save the key file.

The Save
Public Keys
dialog box

Figure 16-16.



Public keys you currently have are listed here

You can save the file to a floppy disk and send it to another user. You can also save the file on your hard disk, then attach it to a mail message that you send to another user. Alternatively, you can save the file in a shared directory on a network server where all users place their public keys. Your network administrator can help you with such a shared directory, if one exists.

4. Click OK to save the file. You're returned to the Fax Security dialog box.

Getting Other People's Public Keys

If you want to send private messages to other users, you need a copy of their public keys. They can give you the public key on disk or store it in a shared public folder on your network. If it is in a shared folder, ask your network administrator for its location.

1. Click the Add button on the Fax Security dialog box to access the public keys of other users.
2. You see the standard File Open dialog box. Type the location of the keys (either on a floppy disk or in a shared network directory), select the file, and click OK. The following dialog box appears:



You might see only the public key of the person who gave you the file, or you might see public keys for a whole group of people.

3. Click the key or keys you want to add to your system and click OK. In this example, only Tom Sheldon appears in the list.

The public keys for the users you selected are now in your address book so you can send the users encrypted messages. How to do that is described next.

Sending “Key-Secured” Fax Messages

Once you’ve set up key encryption, you can encrypt your messages. If you’re using the Fax wizard, click the Security button as described earlier in “Fax Transmission Options.” If you’re working in the Message Compose dialog box, choose Send Options on the File menu, then click the Security button. Either way, you see the dialog box shown in Figure 16-17.

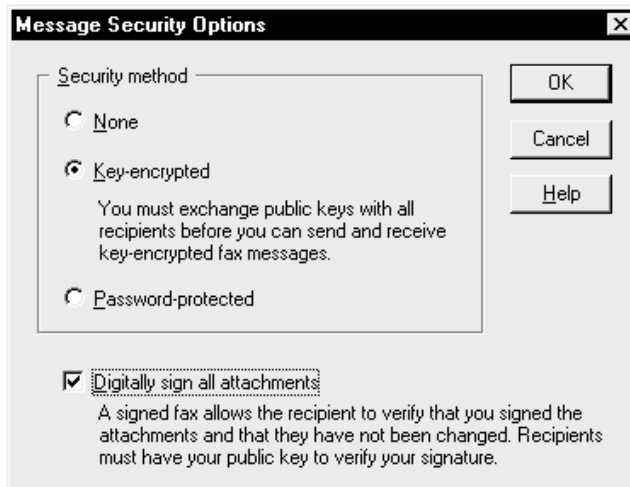
- ⇒ To send an encrypted message to another user, click the Key-encrypted button and click OK. You must have the recipient’s public key on your system. If you don’t, refer to the previous section. It explains how to exchange keys.
- ⇒ To digitally sign a message with your private key, click the Digitally sign all attachments checkbox. Anyone with your public key can look at the file. Use this method to prevent anyone from tampering with your transmissions.



Tip: If you need a validated document from another user, make sure the other user digitally signs the message with his or her private key before transmitting it.

Making a fax
message
secure

Figure 16-17.

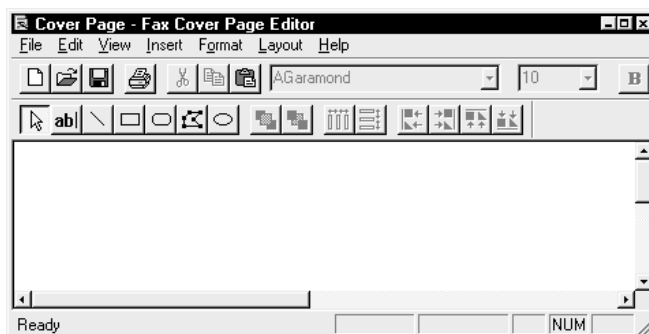


Sending Cover Pages with Faxes

The Fax Cover Page editor lets you edit or create fax cover pages. You can access the cover page editor in one of the following ways:

- ⇒ **In Exchange, choose Microsoft Fax Tools from the Tools menu, then click Options on the cascading menu. On the Message tab, click the New button to create a new cover page, or select an existing cover page in the list and click Open to edit it.**
- ⇒ **Open the Start menu, then choose Programs, Accessories, Fax, and Cover Page Editor.**

A Fax Cover Page Editor window similar to this one opens:

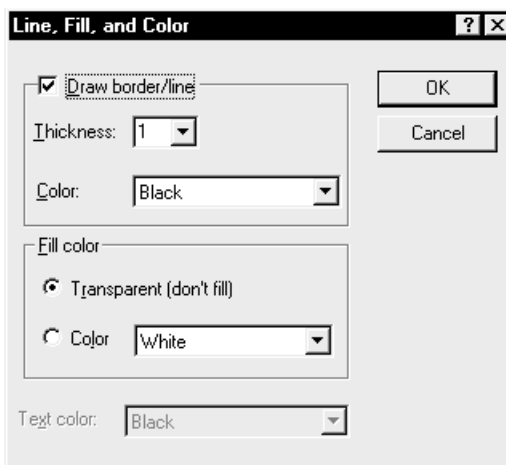


You can include pictures as well as text on a cover page. All fax cover pages should have a recipient name and recipient fax number. The recipient's name appears in the {Recipient Name} field when the fax is sent. You'll find a list of interesting fields you can add to cover pages on the Insert menu.

When you add a field, it is dropped as an *object* into the work area. From there, you can click and drag it to a new position. You can also draw graphics—boxes, circles, and polygons, for example—with the drawing tools. Once you create the objects, you can select and move them. To select more than one object, hold the **CTRL key and click each field, or drag a box around the fields.**

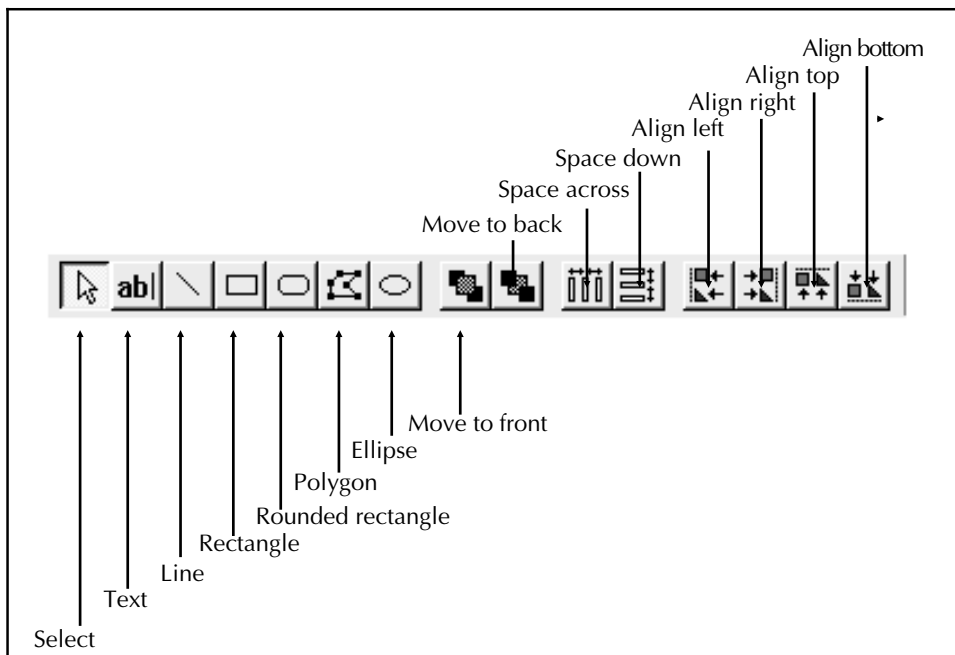
Figure 16-18 shows the drawing tools in the Fax Cover Page Editor. The following is a brief description of what you can do with these tools:

- ⇒ **Click the Select tool to click and drag objects.**
- ⇒ **Click the Text tool to type text. To change the color of text, choose Color from the Format menu and choose a new color. You're limited to whites, grays, and blacks, but you can put white letters on a black background if you're the artistic type.**
- ⇒ **Click the Line, Rectangle, Rounded rectangle, Polygon, and Ellipse tools to create graphic objects. After you've drawn an object, choose Line, Fill, or Color from the Format menu. The following dialog box opens. Select a line width and fill for the object.**



Drawing tools
in the Fax
Cover Page
Editor

Figure 16-18.



➤ **Click the Space down and Space across buttons to evenly space the objects you selected.**

The spacing and alignment tools are important for aligning the text and picture blocks you place in the picture. You'll find more alignment options on the Layout menu under Align Objects and Center on page.



Tip: Choose Grid Lines on the View menu to display grid lines, which help you align new objects.

16

A Cover Page Exercise

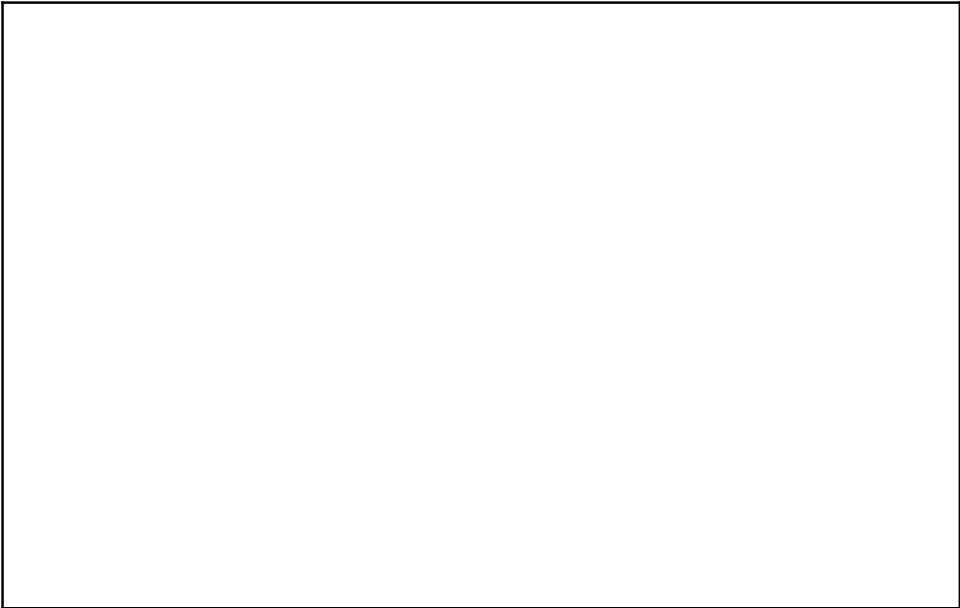
Let's try creating a new cover page. You can work with an existing cover page or start a new one. Choose Open on the File menu to open an existing page.

1. **Start by picking the Rounded rectangle tool and drawing a large rectangle at the top of the cover sheet. Choose Grid Lines on the View menu to help align the object, if necessary.**
2. **After you've drawn the object, it looks something like Figure 16-19. The small blocks, or handles, at the sides and corners mean that the object is "selected." You can point and click the handles to adjust the width and height of an object.**
3. **To see how the object is positioned in relation to the entire page, choose Print Preview on the File menu.**
4. **With the object still selected, choose Line, Fill, and Color from the format menu, then select a different line width and fill color (such as light gray).**
5. **Add some text fields to the box. On the Insert menu, choose Recipient, then Name. The text is inserted into the work area, as shown in Figure 16-20.**
6. **Click the Select tool, and then click the text that was just**



An example
cover page

Figure 16-19.



Inserting text fields
Figure 16-20.

- inserted and drag it to the top of the box you just drew.**
- 7. After you’ve added a few text fields, align them. First select the items by holding the `CTRL` key, then click the items you want to align. Next, click one of the alignment buttons in the toolbar.**

You can keep adding more text fields to suit your needs. This exercise should give you an idea of how to draw objects, insert text fields, and move objects around in the work area to create a fax cover sheet.



T
ip: If you have a picture of yourself or a company logo, paste it onto the cover page and drag it into position.

When you’re done, choose Save As from the File menu to save the cover page. Now you can select it from the cover page list when you send other faxes.

The computing environment for many people goes well beyond the desktop. These days, many people are connected to networks and have access to data and devices on other computers. They can also communicate with others by electronic mail and share information like schedules and documents. However, going on the road often means losing contact with these computing resources. Fortunately, Windows 95 includes new features to support people who take their computers on the road.

If you take your computer on the road, you probably fall into one or more of these categories:

- ⇒ You move from office to office in the same building to attend meetings, give presentations, or work with other people on projects.
- ⇒ You work at an office but also take work home in the evening or on weekends.
- ⇒ You work on the road and at client sites but need to communicate often with a home office.

Unfortunately, when you hit the road or work at home, you lose the computing environment you're familiar with:

- ⇒ You lose your connection with printers, fax machines, modems, and other devices that are attached to your office network.
- ⇒ You lose the ability to instantly communicate with other users via electronic mail, unless you have a dial-in mail system.
- ⇒ Files on mobile computers become "out-of-sync" with the files on desktop computers and network servers. You must track and update files that change, and sometimes it's hard to tell which file is most up to date, the one you took home for the weekend or the one on your office computer.
- ⇒ Reconnecting to a network after you've been away can pose problems when it comes to entering logon names and connection numbers.
- ⇒ Accessing network resources from a remote location poses security problems.

Windows 95 has new features to help solve these problems and help people who take their computers out of the office stay connected with their desktop systems, networks, and home offices. The following features are discussed throughout this chapter:

- ⇒ **Dial-up networking** Make quick and easy connections from home or from a customer site to a company network. Windows 95 dial-up networking supports the new high-speed communication devices and

protocols. It also provides secure connections between remote sites. The Windows 95 networking architecture is designed with mobile computing in mind so that users and applications on a remote network node have the same access as if they were using a local network node.

- ⇒ **“Hot-docking”** You can unplug a portable computer from its desktop docking station and move it to another office in the same building or to other locations. The computer doesn’t need to be shut down and the desktop arrangement is preserved so you can quickly start work at the new location.
- ⇒ **PC Card Support** The PC Card (PCMCIA) is a plug-in peripheral such as a network card, modem, or disk drive that users plug into their portable computers. Windows 95 fully supports the PC Card so that software is automatically reconfigured when a card is inserted or removed.
- ⇒ **File synchronization** When you come back to the office, you can synchronize the files you took away with the original files on a desktop computer or server.
- ⇒ **Deferred printing and faxing** A convenience feature that lets you send your documents to a printer, even when you’re not connected to a printer. The print jobs go in queue and automatically print when you reconnect with a system that has a printer or fax machine, even if you are reconnecting through a modem from a remote location.
- ⇒ **Remote e-mail** Send and receive electronic mail at remote locations when you reconnect a portable system to the phone. Windows 95 automatically redials the appropriate mail servers to pick up or send mail.
- ⇒ **Power Management** Allows applications to be aware of the power status of a portable computer so that files can be automatically saved or disk-intensive activities can be deferred until later.

On the Road with Windows 95

Windows 95 supports mobile computing. Now you can plug and unplug portable computers without disturbing work in progress or breaking vital connections.

A *docking station* is a device that attaches to a portable computer. A typical docking station provides power, a network attachment, video connectors, and slots for additional plug-in boards. Docking stations are supposed to make portable computers work like normal PCs in the office or home. Most portable computer manufacturers now provide docking stations so you can attach or remove a portable without powering off the system. You could create a presentation minutes before a meeting and move your portable

computer to a docking port in another office that has a different video monitor or other configuration. You don't even need to shut down applications, power down the computer, or reboot at the new location with some computers.

Moving a portable computer from one docking station to another or just using it as a standalone portable system has presented configuration problems in the past. Docking ports are usually configured for a different network interface and video monitor. When you take a portable with you as a standalone system, you need a way to easily switch from one device configuration to another. Windows 95 solves this.

When Windows 95 detects different hardware settings, it builds a new configuration automatically in most cases. Its ability to automatically rebuild a configuration depends on two features:

- ⇒ **Hot-docking capabilities** *Hot-docking* is an industry term that refers to the ability to remove a computer from a docking port, or a device from a computer without first turning the computer off.
- ⇒ **Plug-and-Play** This is an industry term that allows computers to detect when new peripherals like adapters, disk drives, and other components have been installed, then to configure the devices automatically. Windows 95 supports Plug-and-Play. Some devices may be both hot-docking and Plug-and-Play.

If Windows detects a hardware change in this case, it rebuilds its configuration and loads or unloads drivers as necessary.

If devices don't support the above features, you will need to turn the computer off, then back on again before Windows 95 can detect the new hardware configuration and install or remove drivers. Windows 95 can't detect all devices, so you might need to create an alternate configuration and specify the configuration when you reboot your computer. Refer to the section called "Changing Configurations" in Appendix A for information on creating other startup configurations. For example, you could create a startup configuration called "On the road" that you use when you're away from the office.



Tip: Look for the Eject PC option on the Start menu if you have a portable computer. You choose it when you want to remove your portable from its docking station.

Deferred Printing

“Deferred printing” is when you create print jobs while you’re away from your printer and print them when your printer and computer get reconnected. You could also use this feature if you print your work on a network printer but it is unavailable. If you’re traveling somewhere and you know what kind of printer awaits you and have a driver on your computer that supports that printer, you can even create deferred print jobs and print them when you arrive.

To defer printing, follow these steps:

1. Choose Settings from the Start menu.
2. Choose Printers to open the Printers window.
3. Click the printer for which you want to defer printing.
4. Choose Work Offline from the File menu.

These steps “gray out” the printer to indicate that printing has been deferred. Another way to achieve similar results is to print to a file, rather than a printer port. This creates files that you can copy to other systems, or even give to another person to print on their printer.

1. Right-click the printer you want use.
2. Choose Properties from the context menu.
3. Click the Details tab.
4. In the “Print to the following port” field, choose File.

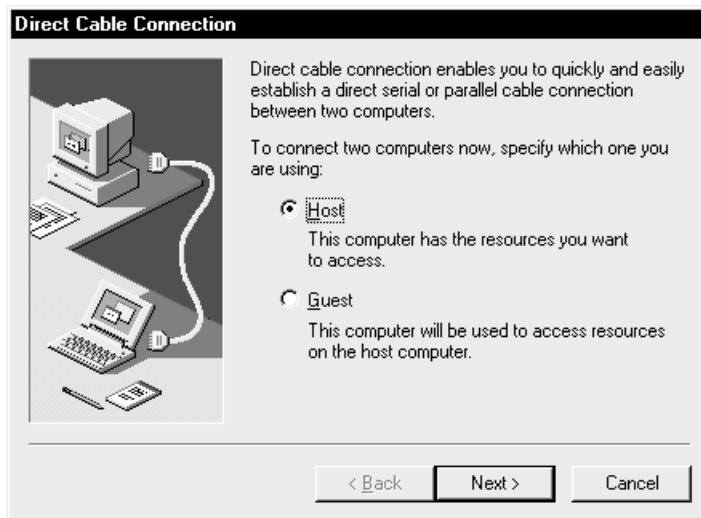
When you print to this printer, a Save As dialog box will appear so you can name the file and disk where you want to send the print job to.

Direct Connections to Other Computers

You can make a direct connection to another computer in your office by running a special cable called a *null-modem cable* between the serial ports of two computers. Most computer and electronics stores sell null-modem cables. Once the computers are connected, you run the Direct Cable Connection utility to establish the link between the computers and exchange files or share resources. In effect, a direct cable connection creates a two-computer network.

Here’s how to use the Direct Cable Connection utility. As shown in Figure 17-1, one of the computers is called the *host* and the other is called the *guest*. The host is the one to which the resources you want to use are connected.

Setting up a direct cable connection between two computers
Figure 17-1.



For example, if you're linking the computers so both can use a printer, the computer that is attached to the printer would be the host computer.

1. Connect the null-modem cable to the serial ports of each computer.
2. Go to the first computer and start Direct Cable Connection. You can access it by opening the Start menu and choosing Programs, Accessories, then Direct Cable Connection. The dialog box in Figure 17-1 appears.
3. Choose either Host or Guest, then click Next and specify the port that the null-modem cable is connected to.
4. Click Next again, then type a password, if necessary, and click Finish.

The first computer displays a message to tell you it is waiting for the second computer. Go to the second computer and repeat these steps to establish the connection. Once the computers are connected, you can open the Network Neighborhood and access resources on the other computer.

The Briefcase: Keeping At-Work and On-the-Road Files in Sync

If you work on the road, you probably have a computer at work and a portable computer that you carry with you, or you might detach your portable from the network and take it with you. When you get ready to go on the road, you probably copy files from the desktop computer to the portable computer. But when you edit the files on the road and return to the office, the files on the portable are “out-of-sync” with the files on the computer in your office.

The Windows 95 Briefcase keeps your files in sync. It tracks the changes made to files on different computers and automatically updates files. Before the Briefcase, you had to keep detailed notes or compare file creation dates to determine which files were the most up to date.

The briefcase metaphor is appropriate. You simply drop the files you want to take with you onto the Windows 95 Briefcase. When you reconnect your portable PC to a network or a docking station and move the Briefcase back to your desktop, the files on your desktop computer are updated to reflect changes made to the files in the Briefcase. The Briefcase has a special database file that keeps track of where files come from and their status.



Note: If another user works at your computer or the original files are stored on a network server, both the portable Briefcase files and the original files might change. Windows 95 reconciles differences in files, if you choose to do so, although this can be a tricky proposition in some cases.

Creating a Briefcase to Keep Files In



You need to initially install a Briefcase on your desktop or main computer. You can install more than one Briefcase on your computer, but that can be confusing, so I don't recommend it. Here are the steps for creating the Briefcase. Starting the setup is as simple as double-clicking the Briefcase icon on your desktop.

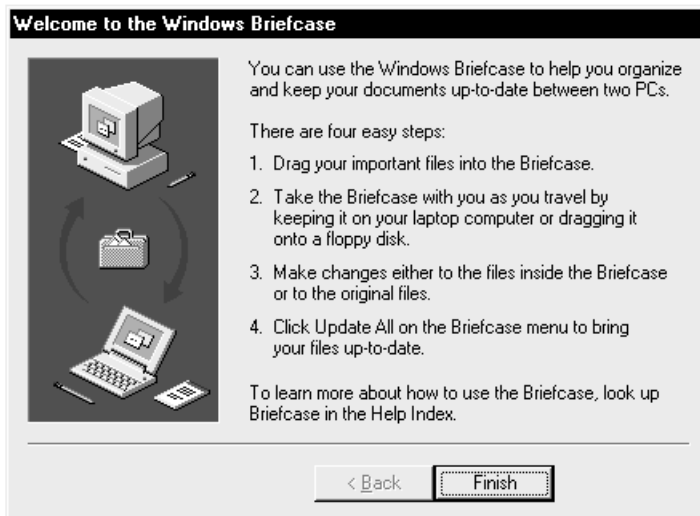
If you don't see a Briefcase icon on your desktop, either the Briefcase was deleted or the Briefcase feature wasn't installed during setup. Try one of these steps:

- ⇒ Right-click a blank part of the desktop, then click New on the context menu and choose New Briefcase. If New Briefcase is not available, you need to install the Briefcase support files, as discussed next.
- ⇒ Open the Control Panel, then open the Add/Remove Programs utility. Click the Windows Setup tab, then highlight Accessories in the list and click the Details button. Make sure Briefcase is check-marked, then click OK twice to install Briefcase support.

When you first open the Briefcase you see the Briefcase setup wizard shown in Figure 17-2. The wizard provides instructions on using the Briefcase.

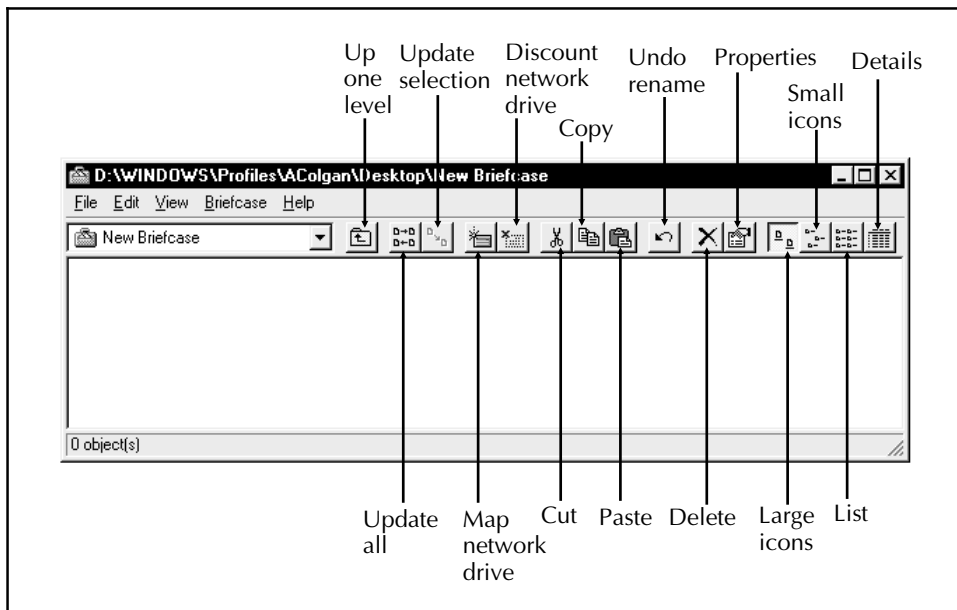
When you click Finish, you see a blank Briefcase window like the one pictured in Figure 17-3. If you don't see the toolbar, choose Toolbar from the View menu.

You use the buttons on the toolbar to manipulate files in the Briefcase, connect with network drives, delete files, or look at their properties, among other things. Now you're ready to copy files to the Briefcase so you can take them on the road.



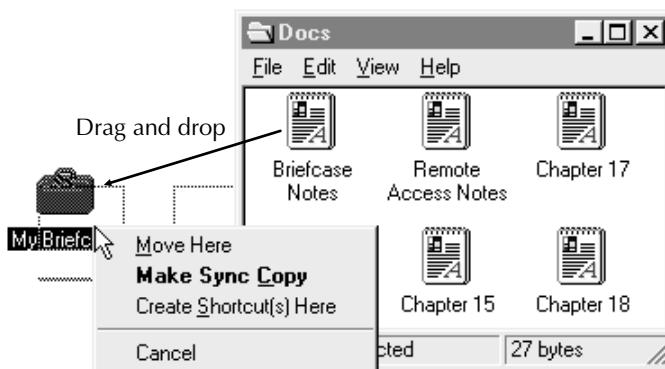
The Briefcase setup wizard
Figure 17-2.

An empty Briefcase window
Figure 17-3.



Copying Files to the Briefcase

Now you're ready to start using the Briefcase. I'll walk you through an example so you can see how the Briefcase works. As shown here, I copy the three top files from the Docs folder into the Briefcase by dragging and dropping them into place:

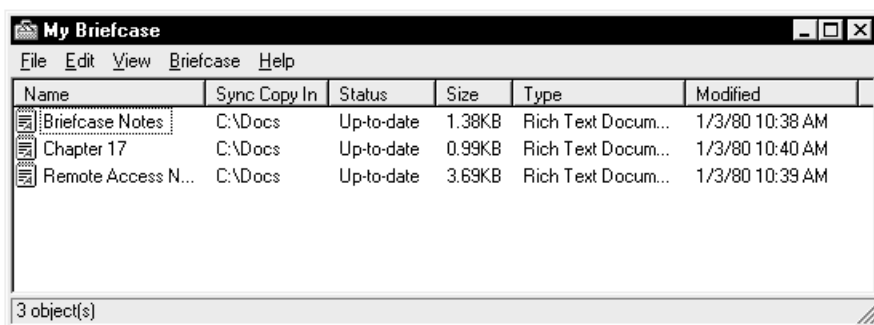


Note the following when you copy files or folders to the Briefcase:

- ➡ You can copy one file, groups of files, or entire folders into the Briefcase.

- ⇒ If you click and drag with the left mouse button, the files are *copied* by default (rather than moved) into the Briefcase.
- ⇒ If you click and drag with the right mouse button, the shortcut menu appears when you point to the Briefcase. The default is to copy (Make Sync Copy) files.

Note that the Move Here option is not applicable when using the Briefcase since you want to maintain a sync copy on the original machine. The sync copy also serves as a backup. Now when you double-click the Briefcase to open its window, you see a file listing similar to the following:



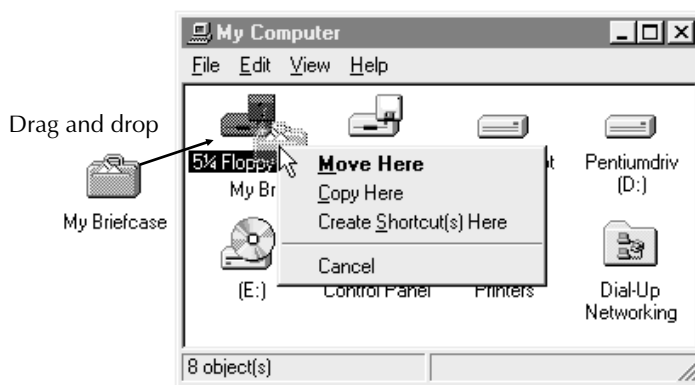
Moving Briefcase Files

Now you can move the Briefcase to a floppy disk or another computer. For example, if you move the Briefcase to a floppy disk, you can take the disk home with you or place it in a portable computer and copy the Briefcase to the portable computer's hard drive. You can also move the Briefcase over a network to a hard disk on another computer. You would do this, for example, if you wanted someone else to read and edit your files and then return them to you, or if you needed to do some work on the other computer yourself.



Caution: You can only move the Briefcase to other Windows 95 computers. If you edit files in the Briefcase on a computer that doesn't recognize the Briefcase, you won't be able to synchronize your files when you bring them back to the source computer.

As shown in the following illustration, I move the Briefcase to a floppy disk:



To move your Briefcase to a floppy disk, follow these steps:

1. Open the My Computer window to show the 5 1/4- or 3 1/2-inch floppy drive object.
2. Right-click and drag the Briefcase from the desktop over the floppy drive.
3. Release the mouse and choose Move Here from the shortcut menu.

You should choose Move Here and not Copy Here from the menu. The Move Here option removes the Briefcase from your desktop as surely as you would remove a real briefcase if you picked it up and carried it out of the office. If you choose the Copy Here option and leave a copy of the Briefcase on your desktop, the copy might get changed by someone else who uses your computer. That could cause real confusion when you return with your Briefcase.

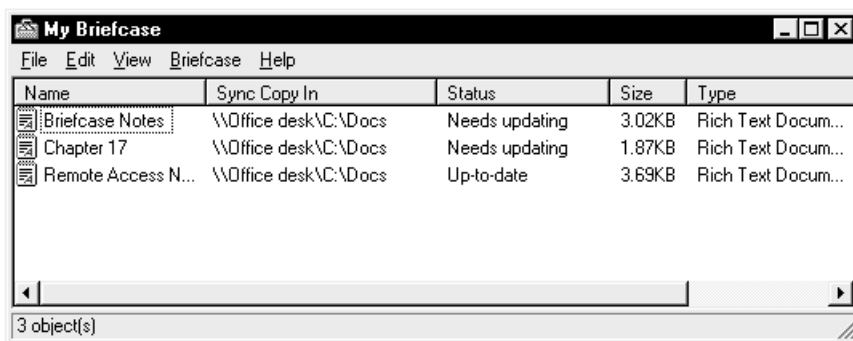
Editing Briefcase Files on the Road

Once you've moved the Briefcase to another computer, you can edit the files as you normally would. But remember that the computer where you work with the Briefcase must be running Windows 95. Here are different ways you would edit Briefcase files on the road:

- ⇒ If you copied the Briefcase to a floppy disk, you could put the floppy disk in your portable computer and copy the Briefcase to the portable's hard drive.

- ⇒ You could put the floppy disk in your portable's floppy drive, but open the files on the floppy drive without copying them to the hard drive.
- ⇒ If you moved the Briefcase to another computer over a network, you could go to the other computer and make changes to the files in the Briefcase.

When you open your Briefcase on the road, you see a file listing like the following:



The important thing to notice here is the Sync Copy In column. It shows the location of the original files, in this case the “Office desk” computer. The Status column indicates which files have changed relative to the sync copy. In this illustration, I changed the first two files while on the road.



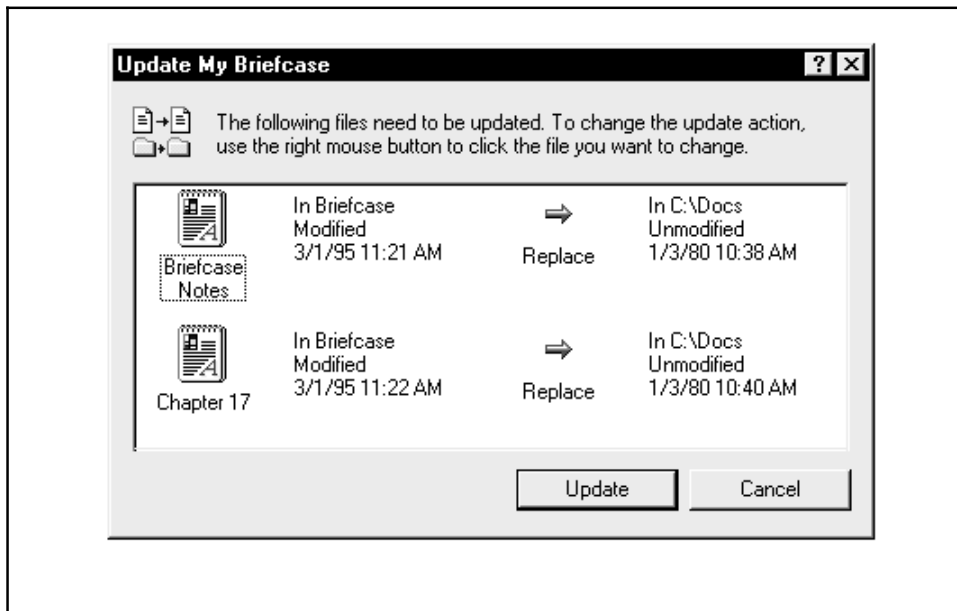
Caution: If you go to another Windows 95 computer, it may already have a Briefcase of its own. Copy your Briefcase into a separate folder to avoid confusing your Briefcase with the other one.

Synchronizing the At-Work and On-the-Road Briefcase

When you return to your main computer after you've taken your Briefcase on the road, you're ready to move the Briefcase back to your desktop and synchronize the files on it with the original files.

1. Open the Briefcase and choose Update All from the Briefcase menu to update files that have changed. The Update My Briefcase window, shown in Figure 17-4, appears. It describes each file that needs

Updating files
from the
Briefcase
Figure 17-4.



updating. Note the direction of the arrows. They tell you that the modified files on the portable computer need to replace the unmodified files in the C:\DOCS folder.

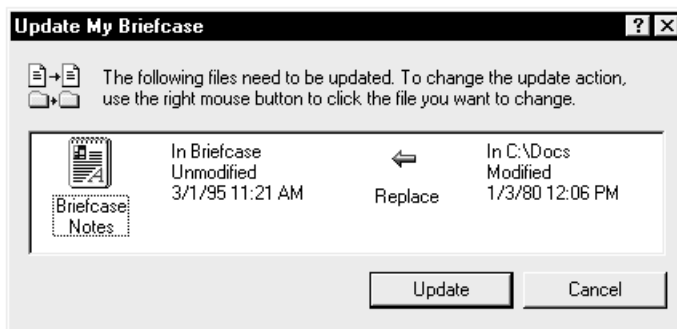
2. Click the files you want to update and click the Update button.

After the files are updated, the Status column in the Briefcase window says "Up-to-date."

Updating Briefcase Files with At-Work Files

The Briefcase retains a copy of the files you put in it, even when you're working at your normal desktop computer. If you change the files on your desktop computer, the files in the Briefcase become out of sync. When you're ready to travel again with your Briefcase, you need to update the files in the Briefcase if you want to take them with you again. The update procedure is described here. Of course, you can add new files to the Briefcase and remove the files that are in the Briefcase if you don't need them while you're on the road.

To update files that are already in the Briefcase, simply open the Briefcase window and choose Update All on the Briefcase menu. You'll see a dialog box similar to the one shown here:

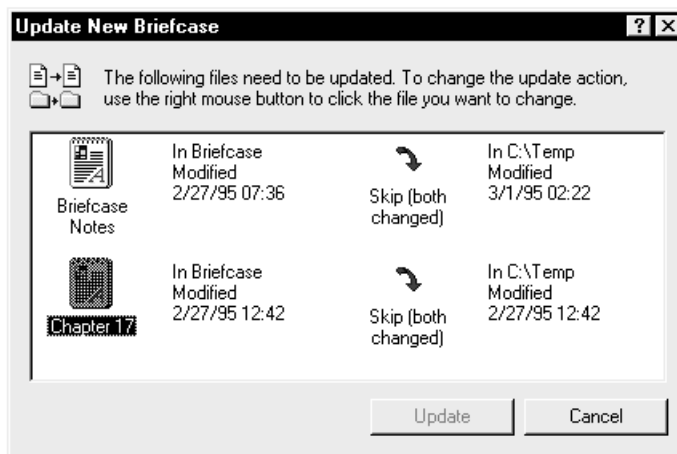


Notice which way the arrow is pointing now. It indicates that the files in C:\DOCS are modified and that the same file in the Briefcase needs updating. Click the Update button in this case to update the files.

Reconciling Files When the At-Work and On-the-Road Files Have Changed

If you copied files from a shared folder on a network server or a computer that's used by several people to your Briefcase, the original files from which you got the copies may have changed while you were on the road. If this is the case and you return to the original location and attempt to update your Briefcase, a reconciliation problem occurs because both copies of the file—the copy you took on the road and the one you made the copy from—have changed.

Here's an example of a Briefcase window in which both the original and the Briefcase files changed:



Both files have been modified and the arrow points limply downward. You must determine how you want to handle the update on your own. Fortunately, some Windows 95-based applications provide special “reconciliation handlers” that can track the differences in files and merge them should this problem occur.

If you right-click an entry in the Update New Briefcase window, you see a menu similar to the following:



Click one of the entries on the menu to replace in the direction shown or choose Skip if you decide not to replace either file. If you skip an update, you'll need to manually update the file yourself or rename one of the changed files and copy it to the system.

Dial-Up Connections: Using Phone Lines to Connect with Your Company

Windows 95 Remote Access Server (RAS) lets you connect with another computer or to your company's network from a remote location like your home, a client site, a hotel room, or even a car (if you have a car phone). RAS is very efficient. How good the connection is depends on the communication device and the type of telephone connection you have. If you are connecting to a network, you can use the same network protocols that are on the network to improve performance.



Note: Out of the box, Windows 95 can only dial in to other computers. You need optional software, available in the Microsoft Plus! package to let other computers dial in and use your computer. (See Appendix D.)

- ⇒ Dial-up networking is integrated into the Windows 95 interface. Once a connection is made, you can access remote resources the same way you access local resources.

- ⇒ A Windows 95 computer can act as a host (with optional software) so that users can dial into it from remote locations. Users on the road or working at home can set their at-work computers to automatically answer calls from their portable computers.
- ⇒ You can implement security to verify logon of remote users to resources on the network.
- ⇒ You can make sure that calls come from valid locations on a host. When a call comes in from a remote user, you can have the host computer hang up and then call the user back at a predetermined phone number. This way, you can be sure that calls come from valid locations.
- ⇒ You can make dial-in users work only on the machines they dial into, or you can give them access to an entire network.
- ⇒ When a remote user has a link to a resource on another computer (a folder, document, database, printer, or OLE object) and the user tries to open it, Windows 95 automatically starts a RAS session to connect with the computer and its resource.

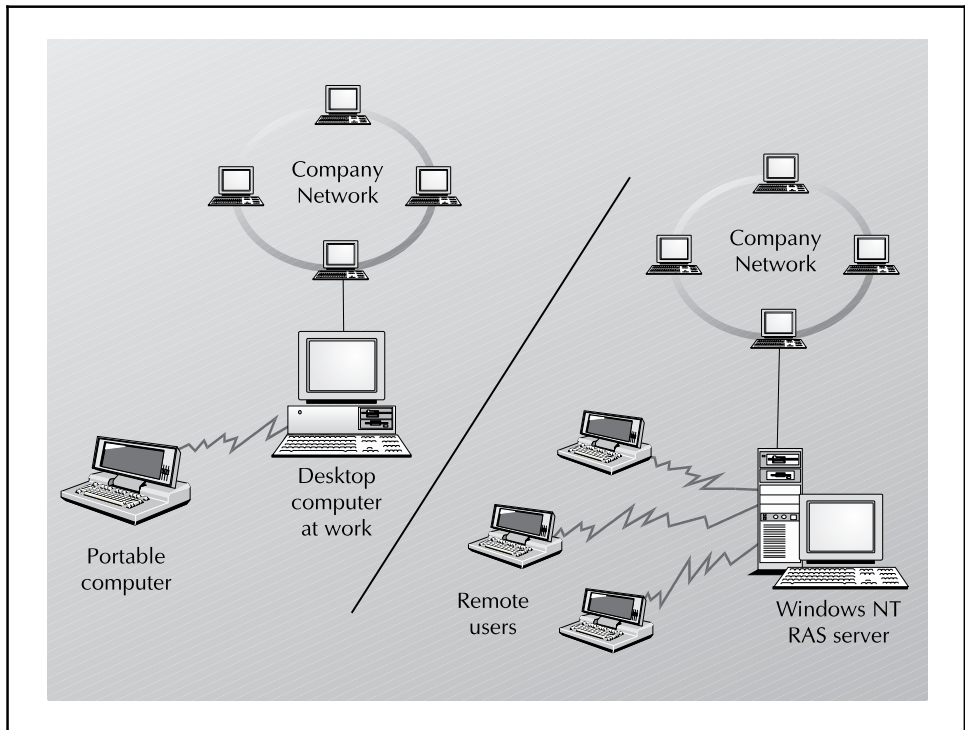
One of the best features of Windows 95 is its ability to sense whether a computer is connected directly to a network (docked) or is portable. You don't need to keep different setup configurations for each situation. Windows 95 loads and unloads the drivers it needs or doesn't need, depending on whether you are docked or mobile.

RAS Connection Methods

Remote Access Server connections take three forms. The first, pictured on the left side of Figure 17-5, is a basic connection between a portable or at-home computer and an office PC. You dial into the office PC and establish a connection through it to your company's network. In this arrangement, you must set your office PC to auto-answer mode before you leave the office.

Two remote connection methods

Figure 17-5.



A more advanced configuration that supports many remote users is pictured on the right side of Figure 17-5. Here, the company has set up a Windows NT server that can handle calls from a number of remote users.



Note: On networks that have a Windows NT 3.5 server, up to 256 users can dial in and access the network at once, depending on the number of modems available.

The third option is to dial in to a Unix server running TCP/IP protocols (such as an Internet connection), a Microsoft LAN Manager Remote Access Server running NetBEUI protocols, and a Novell NetWare Connect server running IPX protocols. If you're not familiar with these protocols, be sure to contact your system or network administrator for the information, drivers, and passwords you need to connect with these servers.

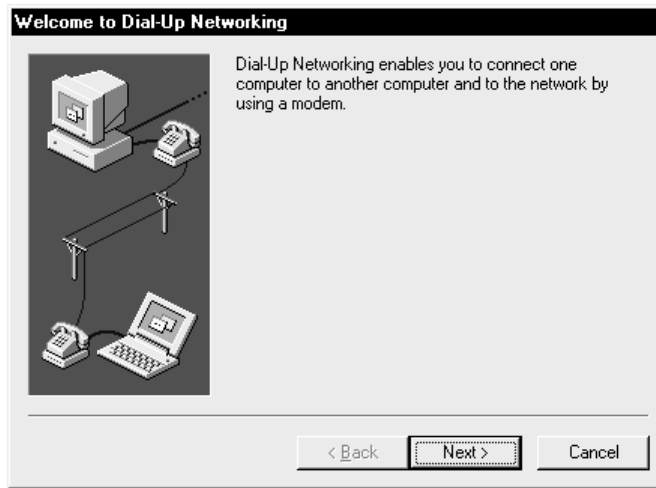
RAS uses the Microsoft Point-to-Point Protocol (PPP) for remote connections. PPP operates between modems. Once a PPP connection is made, the connection is treated like any other connection to a network. In fact, a PPP connection is viewed as a connection between two network interface cards (NICs). You configure RAS connections simply by opening the Network utility in the Control Panel.

When you set up RAS, you install the PPP connection in much the same way you install a network interface card. You then bind a protocol like NetBEUI, TCP/IP, or IPX to it. After PPP and the protocols are installed, you create a remote dial-out session by opening the Dial-Up Networking folder located in the My Computer window. You'll be asked for setup information, including the modem type and the telephone numbers to dial.

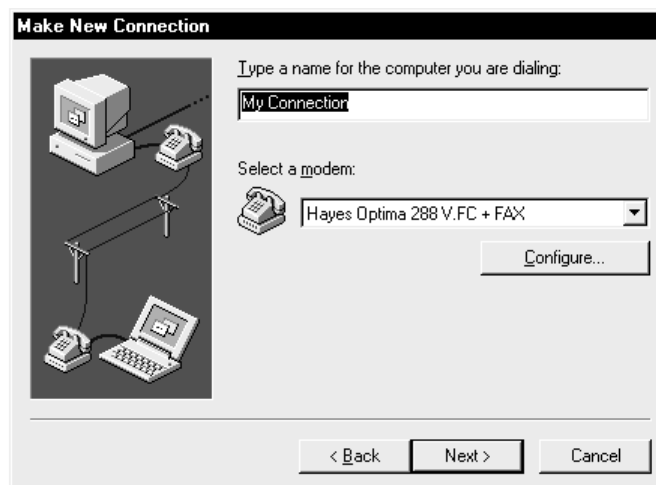
Creating Dial-Out Connections

The Dial-Up Networking wizard helps you create a dial-up connection with just the settings you need. Note that you'll follow these same procedures if you are setting up an Internet connection as discussed in Chapter 20. To set up a dial out connection, follow this procedure:

1. From the My Computer window, open the Dial-Up Networking folder. The first time you open this folder, the following dialog box appears to help you install RAS (or double-click the Make New Connection object):



2. Click the Next button to continue with the installation and display the following dialog box:



3. Type a name for the session you are creating in the top field. Keep in mind that you can create more than one remote session connection, so type a name that appropriately defines the computer you will dial into for this session. For example, if this session will dial into your company's network, type something like "CambriaCorp's network."

If you already installed a modem (how to do so is described in Appendix C), your modem is listed in the Select a modem field. You can choose another installed modem by clicking the down-arrow button, or you can configure a modem by clicking the Configure button. Refer to Appendix C for information on installing and configuring modems.

4. Click the Next button to display the next dialog box for this RAS connection:

Make New Connection

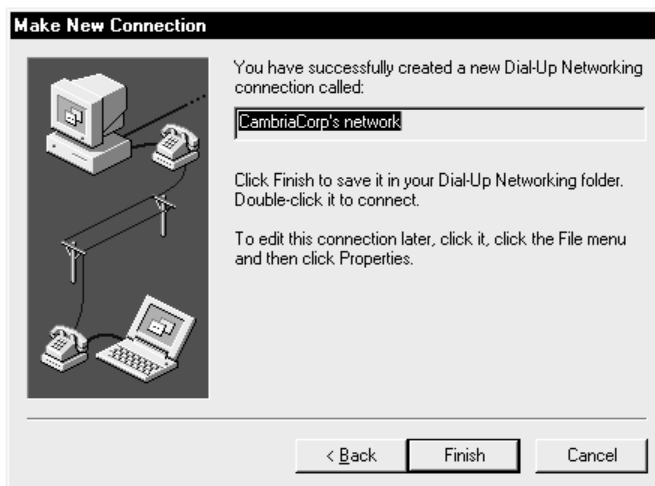
Type the phone number for the computer you want to call:

Area code: Telephone number:

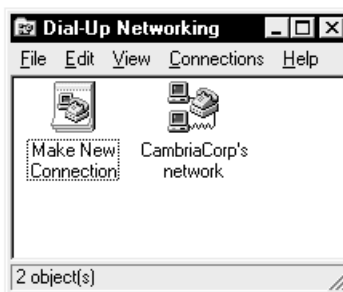
Country code:

< Back Next > Cancel

5. Type the area code and telephone number of the computer you want to call.
6. Click the Next button to continue with the installation and display the following dialog box:



7. Click Finish to complete this configuration. You now see an object for the new connection in your Dial-Up Networking window, as shown here:



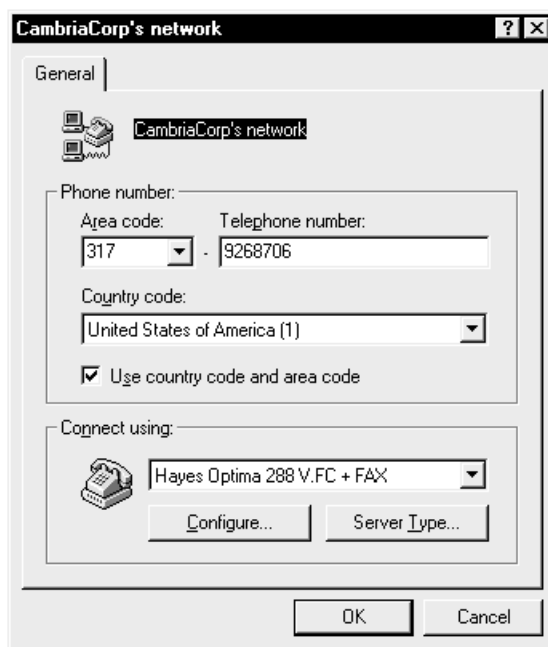
You can view and change the settings for the connection by right-clicking it and choosing the Properties option, as discussed in a moment. To create another dial-up connection, double-click the Make New Connection object and repeat the steps above.



Tip: You can create a shortcut on the desktop for the new object by right-clicking and dragging it to the desktop, then choosing Create Shortcut Here from the menu.

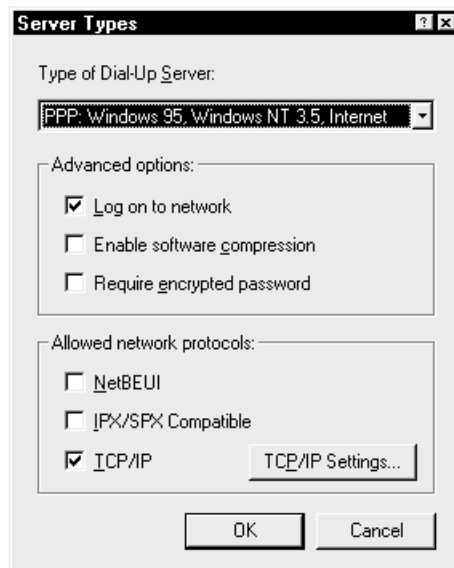
Modifying the Connection Settings

You can modify the settings by opening the Properties dialog box for the connection you just created. Right-click the object in the Dial Up Networking window, then choose Properties from the menu to see a dialog box similar to the following:



You can change the telephone numbers in the Phone number field and the modem type in the Connect using field. If you want to configure the modem, click the Configure button, then refer to Appendix C for details.

Click the Server Type button to display the following dialog box.



In the Type of Dial-Up Server field, choose one of the following connections:

- ⇒ **PPP: Windows 95, Windows NT 3.5, Internet** Choose this option if you are connecting to another Windows 95 computer that is set up with the optional server software, to a Windows NT 3.5 computer running RAS (Remote Access Server), or to an Internet service provider using PPP (Point-to-Point Protocol).
- ⇒ **NRN: NetWare Connect** Select this option if you are connecting with a Novell NetWare Connect server.
- ⇒ **Windows for Workgroups and Windows NT 3.1** Choose this option if you are connecting to a Windows for Workgroups or Windows NT 3.1 server that is running RAS (Remote Access Server).

You can also set the following options:

- ⇒ Click “Log on to network” if you want to automatically log on using the password you type when starting the connection.
- ⇒ Click “Enable software compression” if you want to compress transmitted data to reduce transmission time and phone costs. Don’t select this option if your modem does compression in hardware.
- ⇒ Click “Require encrypted password” if you want to encrypt your password before sending it across the line. The computer you are connecting to must support encryption. If it does, enable this option and type your

password as normal. Windows 95 will encrypt the password before sending it.

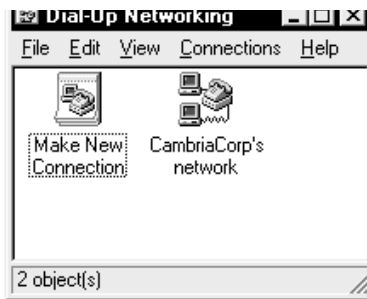
- ⇒ In the “Allowed network protocols” field, enable the protocols that you can use when connected with the server. Check with your network administrator for details about which protocols are used on your dial-in network. If you are connecting with an Internet service provider, enable TCP/IP and disable the other protocols (in general, disable the protocols you don’t need).



T ip: Click the TCP/IP Settings button to change TCP/IP address and name settings. Refer to “Configuring Windows 95 TCP/IP Services” in Chapter 20 for details.

Making Remote Connections

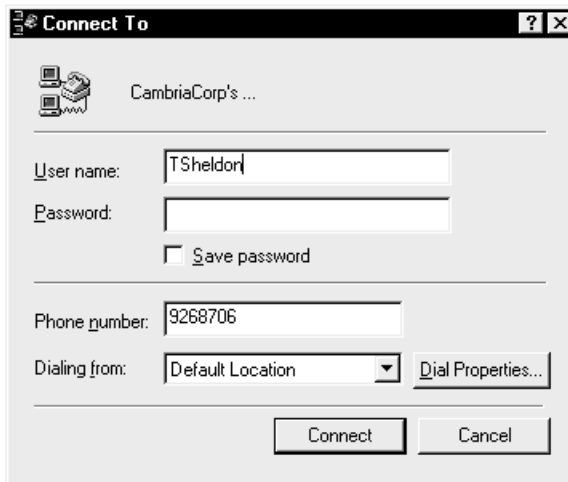
When you’re ready to dial a remote access server system, simply open the Dial-Up Networking window and double-click the icon of the session you want to activate. Your icon will look similar to CambriaCorp’s Network icon in this illustration:



T ip: As mentioned before, you can create a shortcut for the object by right-clicking and dragging it to the desktop.

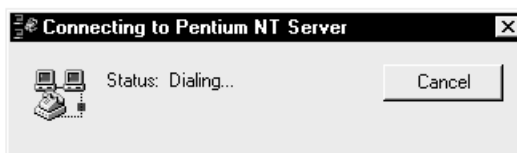
In the following example, I connect with a Remote Access Server running on a Windows NT server.

1. Double-click the remote connection object (such as CambriaCorp's network in the previous illustration) you created in the previous section. A dialog box similar to the following appears:

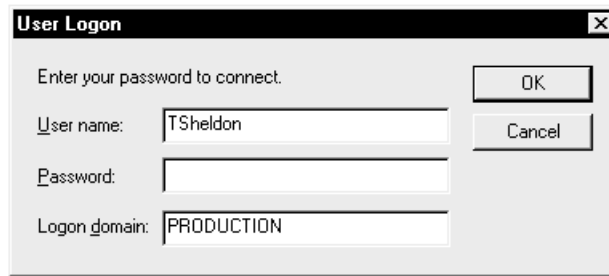


You can type a password in the Password field ahead of time. If you don't type it, you'll see a logon box when you connect with the remote server. You can also change the phone number, dialing location, or dialing properties, if necessary. Dialing Properties are discussed in Chapter 16 in the section called "The Dial Helper."

2. Click the Connect button when you're ready to dial. In a moment you see a dialog box similar to the following. It provides status information about the connection in progress.

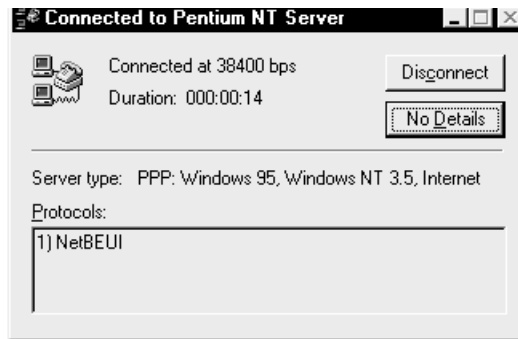


If you didn't enter a password on the startup screen, or if the password wasn't verified, you see a dialog box similar to the one shown here (if you are dialing into a Windows NT System):



This is the same dialog box you see when logging on to a Windows NT domain from a normal network-connected computer.

3. Type in your User name and Password if necessary and click OK. If a connection to a Windows NT server is successful, you see a dialog box similar to the following:

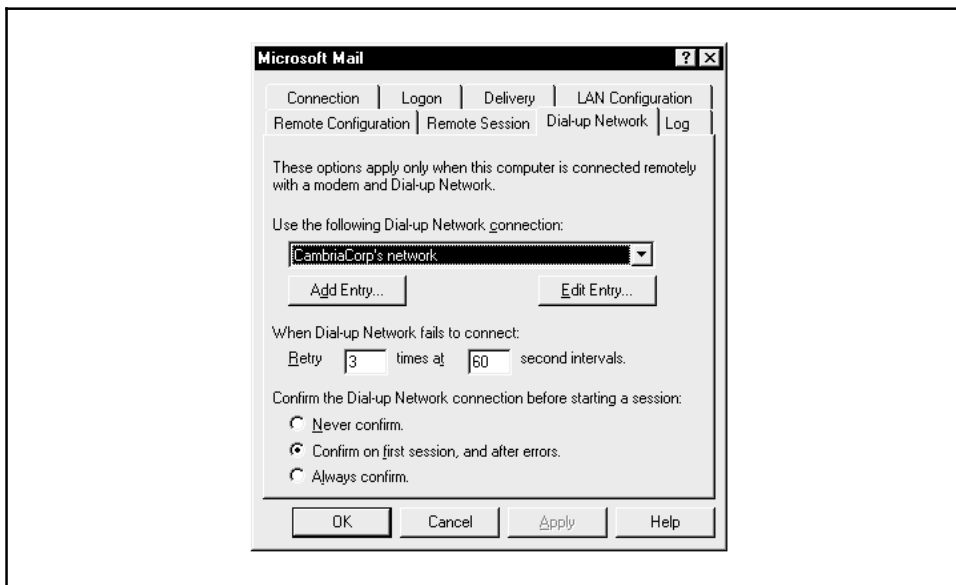


Note: In this case, I clicked the Details button (which converts to No Details) to see the additional Protocol information at the bottom of the dialog box.

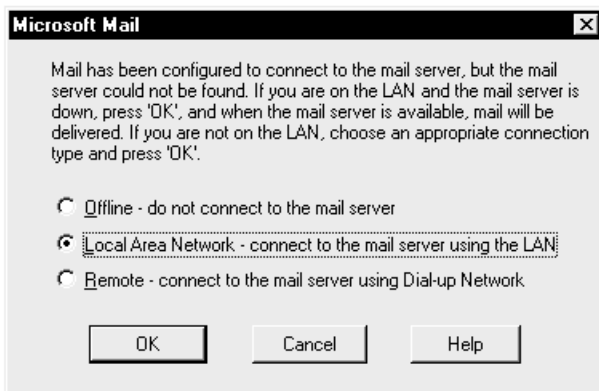
Now you can access resources on the computer you've connected with as if you are connected directly to a computer on a local (rather than remote) network. However, access will probably be slower because you're connected through a telephone link. Open the Network Neighborhood window to view and work with shared resources, as covered in Chapter 14.

You can also start Microsoft Exchange on your computer to retrieve e-mail and other messages. Since you're away from your office and not connected

Remote Mail
settings
Figure 17-6.



to the network in the normal way, you'll see the following dialog box when you start Exchange:



Simply click the Remote option to establish a remote connection to your mail service, then click OK. Your messages will appear in the In box and you can send messages to other users as you would normally. See the next

section, “Microsoft Mail Remote Settings,” for more information on using Mail remotely.



Tip: While you’re on the road, you can create messages and store them in your Microsoft Exchange Outbox, then send them when you connect to your company’s network via RAS.

Microsoft Mail Remote Settings

You can change the Microsoft Mail settings when you dial in to MS Mail from a remote location. To access the settings, start Microsoft Exchange, then choose Options on the Tools menu. When the Microsoft Exchange properties dialog box opens, click the Services tab, then choose the Microsoft Mail service and click the Properties button to see the screen shown in Figure 17-6.



Note: You can also open the Mail and Fax utility in the Control Panel, then click the Properties button to access the options shown in Figure 17-6.

Four of the tabs on the Microsoft Mail properties dialog box contain settings for remote connections. These tabs are Remote Configuration, Remote Session, Log, and Dial-up Network. Here’s a description of each page:

- ⇒ **Remote Configuration** If you select Remote Preview on this box, you’ll get a preview of message headers before the messages are actually transmitted to your computer. You can then choose which messages you want to see, and, in doing so, save on phone connection time and charges. You can also use a local copy of the Postoffice address book (rather than the remote copy), but you need to download it periodically by choosing Download Address Book on the Microsoft Exchange Tools menu.
- ⇒ **Remote Session** The settings on this page determine whether a dial-up session starts when you start Mail and how the remote session ends if you exit Mail.
- ⇒ **Dial-up Network** The settings on this page determine how connection failures are handled and the name of the connection you want to use.

⇒ **Log** The options on this page lets you keep a log of remote session events in a file on your computer.

HyperTerminal, a communication application, is included with Windows 95. You can use it to connect through your modem to online services and to other computers over telephone lines. HyperTerminal can work in the background and stay connected while you do other work. For example, while a file is being downloaded over the telephone lines, you can switch out of HyperTerminal to another application and get some work done.

Important HyperTerminal Features

The important HyperTerminal features are listed below:

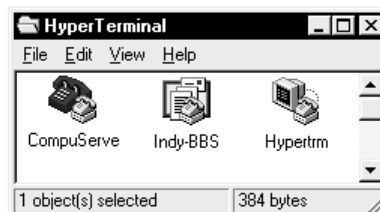
- ⇒ You can create dial-up settings for the online services you log on to on a regular basis. HyperTerminal creates a startup icon that you can double-click to connect with a service.
- ⇒ HyperTerminal emulates common terminals, including ANSI, TTY, VT52, and VT100.
- ⇒ You can download files using binary transfer protocols such as Xmodem, Ymodem, Zmodem, and Kermit.
- ⇒ You don't need to be concerned with communication settings when you use HyperTerminal. It works with the modem and automatically "senses" the baud rate, stop bits, parity, and other confusing settings.

Starting HyperTerminal

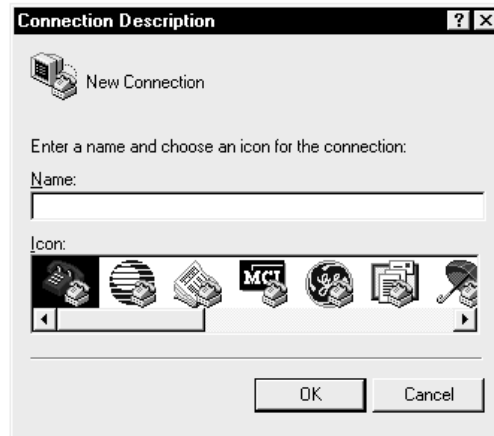
To start HyperTerminal, open the Start menu, then choose Program and Accessories. Choose HyperTerminal Connections from the menu.

The first time you start HyperTerminal, the dialog box in Figure 18-1 appears to help you create a new connection. See "Creating a New Connection" later in this chapter for details.

If HyperTerminal was started before by you or by someone else, you see a window similar to the following. The two objects on the left in the window represent previous connections.



The Connection Description dialog box that you see when you first start HyperTerminal
Figure 18-1.



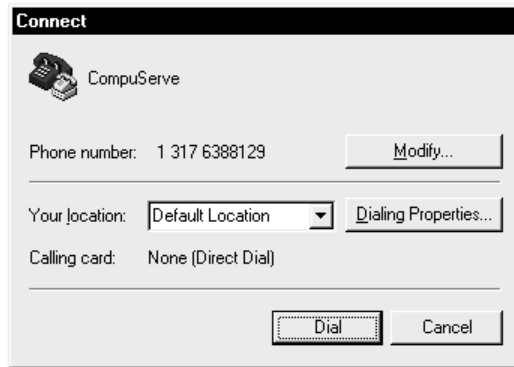
For example, you could double-click the Indy-BBS object to connect with this bulletin board system. Every time you make a new connection, you're given the opportunity to save the connection as an object in the HyperTerminal window.

Creating a New Connection

If you're creating a new connection, you see the HyperTerminal first time startup dialog box (see Figure 18-1). In the Name field, type a name that describes the bulletin board system or online service you want to connect with, then choose an icon to represent it in the Icon field. Next, click OK to display the dialog box pictured here:



This is where you enter the phone number of the service you want to dial. Type the number in the Phone number field and change the other settings if necessary. If your system has more than one modem, select one from the drop-down list in the Connect using field. Click OK to see the Connect dialog box:



This is where you verify your settings. You can dial the new service immediately if you want. Choose a location in the Your location field. Locations are different places where you might use your computer and need to dial from. For example, the dialing information at work might have to include a 9 before the telephone number to access an outside line. If you dial from a client's office, you might need to dial a calling card number. To create a new dialing location or specify one-time only dialing parameters, click the Dialing Properties button, then refer to “The Dial Helper” in Chapter 16.



T ip: If you have call waiting on the same phone line as your modem, be sure to click the Dialing Properties button and enter your code to disable it (normally *70) in the “This location has call waiting” field. This prevents your modem connection from being interrupted by incoming calls.

Modifying the Settings

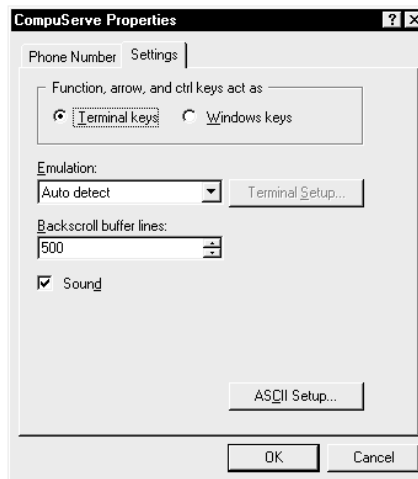
Click the Modify button to display the Properties dialog box, which is shown here:



This is where you enter the phone number and connection information for the new service. If the number is local, be sure to disable the “Use country code and area code” checkbox. Otherwise, you’ll get the familiar message “It is not necessary to dial a one when calling this number” when you try to dial.

You can change the icon by clicking the Change Icon button. This displays the icon menu shown back in Figure 18-1. Just select a new icon from the list and click OK. Click Configure to change the settings for the modem. Refer to Appendix C for information on configuring modems.

Click the Settings tab to make special settings for the new online service. The following dialog box appears:

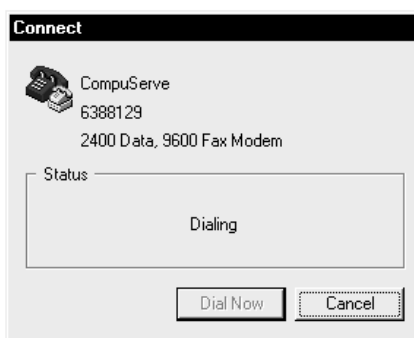


In the top field, you can say whether you want function keys, arrow keys, and control keys to operate with the terminal program or to operate as Windows keys.

In the Emulation field, select a terminal preference based on the requirements of the online service you are dialing into. The Backscroll buffer lines field determines how many text lines are held in memory. As you work online, you might need to scroll back to look at some text. Increasing this value lets you scroll back further. If you don't want to hear sounds, disable the Sound checkbox.

Working Online

To connect with an online service, double-click a preconfigured object in the HyperTerminal window. If you've been configuring a new object, you can also click the Dial button in the Connect dialog box to connect with an online service. The Connect dialog box appears:



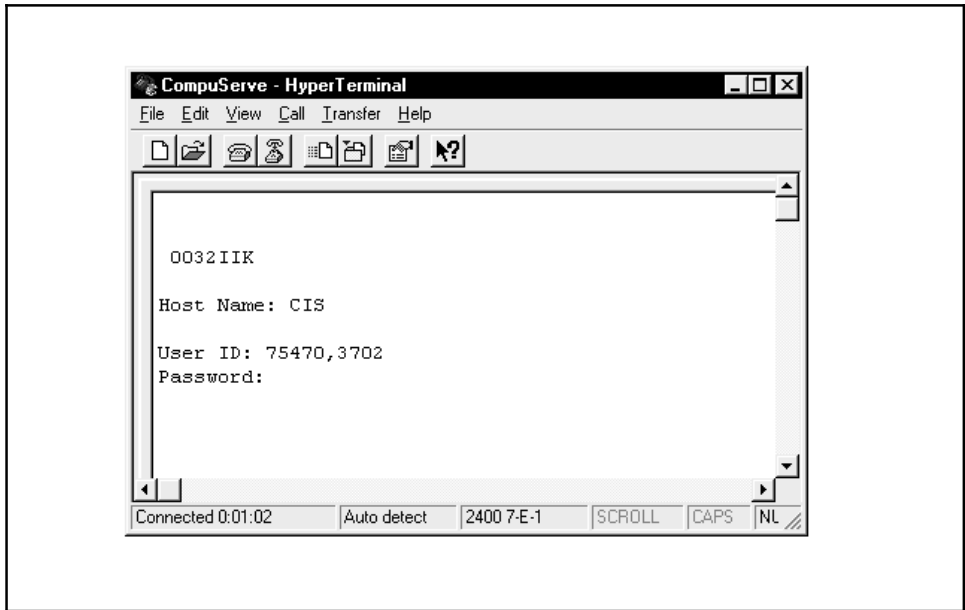
You'll hear the dial tones on your modem, a connection sound, and some high-pitched tones as your modem and the remote modem connect. The tones you hear are the two modems trying to establish mutual connection settings.



Note: Once you're connected, you might need to press the ENTER key to see an initial login screen.

The window shown in Figure 18-2 shows a connection to CompuServe. You type a user ID and password to gain access to the service. Once you are online, follow the screen prompts and menus you see displayed by the online service.

Making a connection to CompuServe
Figure 18-2.

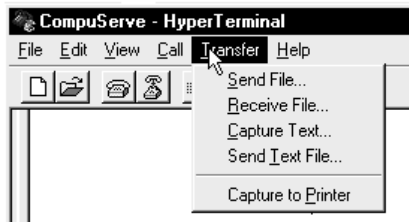


Here is other information you will find helpful when you are online:

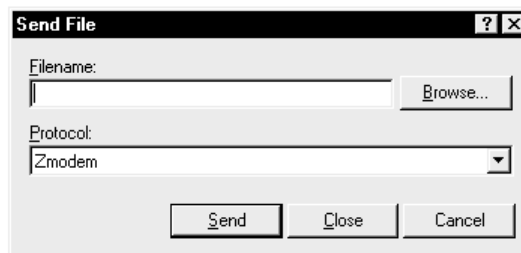
- ⇒ You can use the HyperTerminal scroll bars to move backward through text you've already seen.
- ⇒ Choose Font on the View menu to change the text in the HyperTerminal window.
- ⇒ Choose Disconnect from the Call menu to disconnect from the online service. Don't forget to log off the service first so your account is not charged unnecessarily.
- ⇒ Choose Capture to Printer from the Transfer menu to print text as it scrolls down the screen. You can document your activities or print files you open while online.

Sending and Retrieving Information

The Transfer menu, shown in the following, is where you set file send, receive, and capture options:

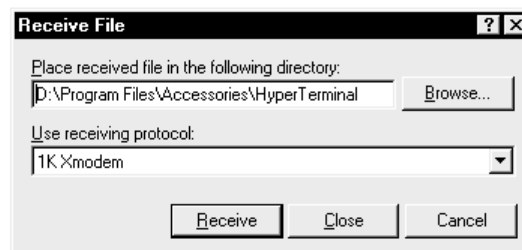


To send a file, initiate a file upload procedure with the online service, then choose Send File from the Transfer menu. The Send File dialog box appears, as shown here:



In the Send File dialog box type a filename or click the Browse button to search for a file. In the Protocol field, choose a protocol that is appropriate for the online service you are using.

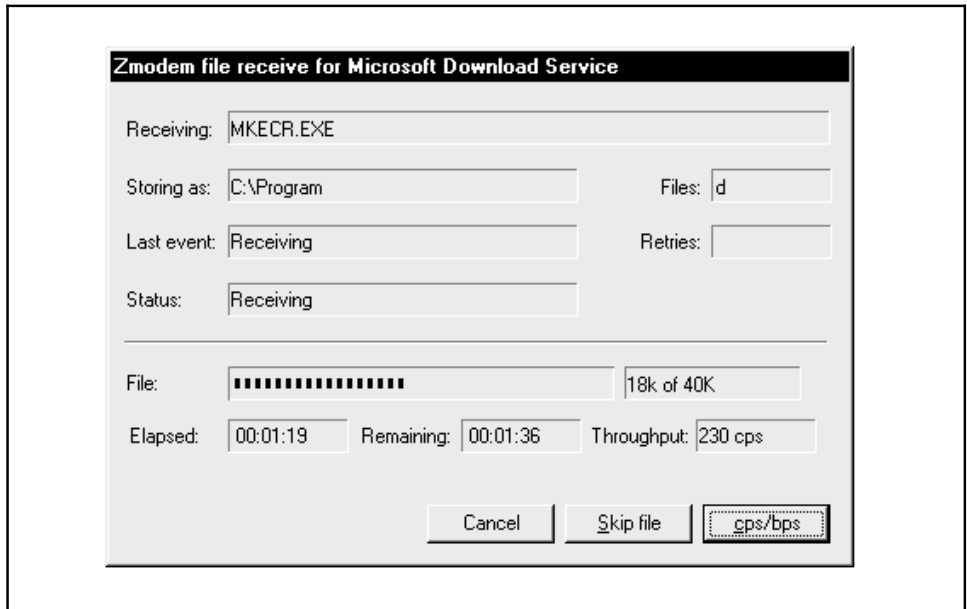
To receive a file, first initiate a file download on the online service, then choose Receive file on the Transfer menu to display the following dialog box:



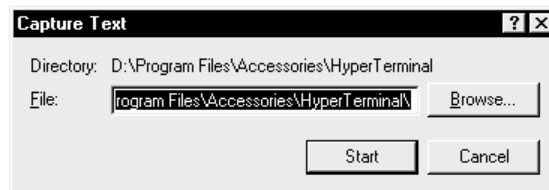
In the Receive File dialog box, you can type a filename for your system in the top field and a protocol in the bottom field. Click the Receive button to begin the file transfer process.

Figure 18-3 shows a Zmodem file download from an online service in progress. The status of the download is listed so you can monitor throughput and other information.

A file
download in
progress
Figure 18-3.



As you work online, you might want to capture the text that scrolls by on the screen to a file on your computer so you can view it later. Choose Capture text on the Transfer menu to open the following dialog box:



Type a filename in the File field and click the Start button to begin capturing the text. You can stop capturing text or pause while text is being captured by opening the Transfer menu and choosing an option.

If you want to send a text file that you created in advance of the online session, first initiate an upload on the online service, then choose Send Text File from the Transfer menu. You see a standard File Open dialog box. Choose the file on your system that you want to upload.

The Microsoft Network (MSN) is a Microsoft-sponsored online service. (As this book is going to press, Windows 95 includes access to MSN. However, if Microsoft doesn't include MSN in the final release of Windows 95, it will be available as a separate product.) With MSN you can chat with other users, search for information, download files to your computer, and get online help for Windows 95 and your applications.

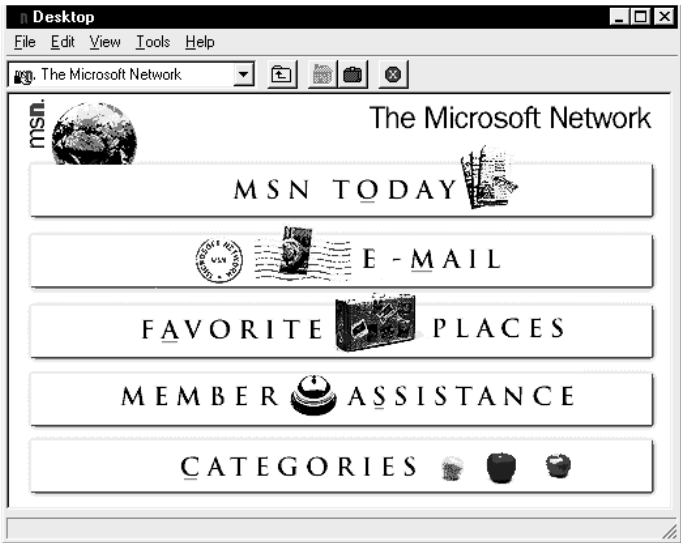
The Microsoft Network is an online service and, unlike the Internet, you are charged to use it. You log on to a conglomeration of computers that hold information managed and maintained by Microsoft or other companies that have contracted with Microsoft. Unlike the Internet, which provides connections to services maintained by many different companies, The Microsoft Network is controlled by Microsoft. However, you can access the Internet while working online with The Microsoft Network.

If you know how to use the Windows 95 Explorer as discussed in Chapter 8, you already know how to use MSN to view and copy online files and other information. When you first log on, you'll see the *Home Base* shown in Figure 19-1.

The Home Base is where you start your exploration of MSN. Just point and click one of the topics on the menu to explore the following areas:

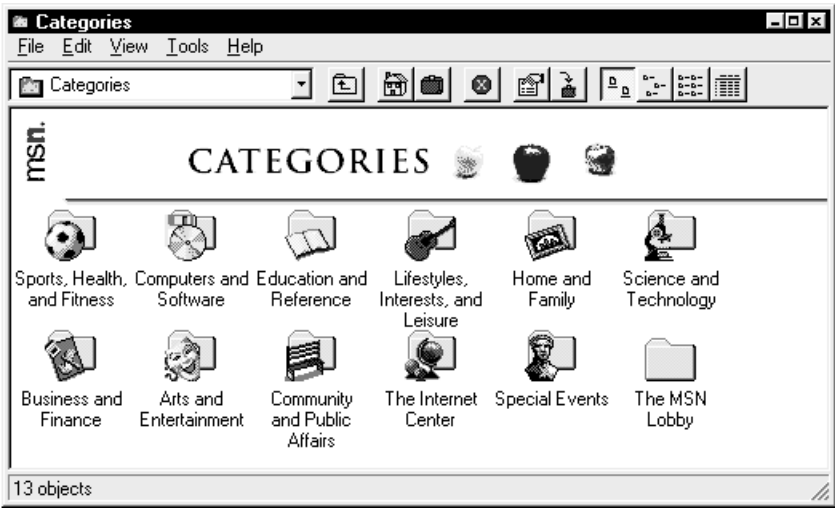
- ⇒ **MSN Today** This page displays a list of events for the current day. Usually it provides a list of scheduled conferences with celebrities or experts discussing a variety of topics.
- ⇒ **E-Mail** This is where you can exchange electronic mail with other MSN users or send mail to Internet users. When you click on this topic the Microsoft Exchange window appears to let you create, send, and read your e-mail.
- ⇒ **Favorite Places** As you explore different areas of MSN, you can designate the places to which you'd like to return. When you encounter a screen that you want to note as a favorite place, choose Add to Favorite Places from the File menu or click the Add to Favorite Places button on the forum's toolbar. The next time you log on, click the Favorite Places button on the Home Page to see a list of all the places you've designated as favorite places, then choose one of the places to quickly jump to it.
- ⇒ **Member Assistance** This is where you can get help from "real" people about how to use MSN or other services.
- ⇒ **Categories** Click this button to begin your exploration of MSN. The Categories window appears as shown in Figure 19-2. It displays the

The Microsoft Network Home Base
Figure 19-1.



different areas of interest available on MSN. (The screen in Figure 19-2 is only a sample; MSN adds new categories all the time.)

Example Categories on The Microsoft Network
Figure 19-2.



Notice how similar the window in Figure 19-2 is to the windows you open on your Windows 95 desktop. Double-click any folder to open it. You can also click the buttons on the toolbar (as described below) or choose menu items to execute various command while working on line.



Tip: The Microsoft Network often displays full-screen pictures that have “hot-spots.” Move the mouse around on the window and if a hand appears, click to see what happens.

Here are some of the other things you can do while working online:

- ⇒ **Chat Rooms** A chat room is a place where MSN members engage in lively typed conversations with other members.
- ⇒ **Bulletin Boards** A bulletin board is a place where messages are posted for others to read. The message remains on a bulletin board for a period of time and other people can respond to it when they read the bulletin board.
- ⇒ **File Transfers** You can go into almost any MSN category and find a file cabinet full of files that you can copy to your own system.
- ⇒ **Kiosks** Almost every category has a kiosk from which you can get information about the information folder you are working in.

Overall, MSN is a great information resource. You can join a chat room or bulletin board to ask other members or the online technical staff questions you may have. You can also look for information in the categories in the form of documents you can either read or copy to your own computer.

Before discussing MSN further, the next section leads you through the sign-on process in case you haven’t already connected.

Signing Up and Logging On to MSN

Begin the sign-up process by double-clicking the MSN icon on your desktop or by choosing Online Registration from the Accessories cascading menu. During the sign-up process, you’re logged on to MSN to obtain the sign-up forms, then logged off. Be ready to enter your name, address, and credit card information. After you fill out the forms, you’re logged back on and the information is verified. That’s all there is to it.

When you start MSN for the first time, you’ll see a dialog box that invites you to try The Microsoft Network. If you have previously signed onto MSN

from a different computer, click the checkbox at the bottom-left corner of the screen to configure MSN with your current account name and password.

In the next box, type in the area code and the first three digits of your phone number in the two fields provided and click OK. A Connect button appears. Click it to dial The Microsoft Network and establish a connection.

Once you connect with MSN, sign-up files are transferred to your system and you are temporarily disconnected from the service. A dialog box then appears so you can enter your new account information.

Fill in the information and read the rules, then click the Join Now button. You are reconnected to the network. At this point, you type an account name (member ID) and a password. Be sure to write down or remember this information because you'll need it the next time you log on.

After filling out the logon information, you are again logged off the system. A dialog box with additional instructions may appear. Eventually, you see the dialog box pictured in Figure 19-3. You will see this dialog box every time you connect with MSN. Type your member ID and password in the Sign in field, then click the Connect button. You can also click the Settings button if you need to change the phone number or modem settings for MSN.



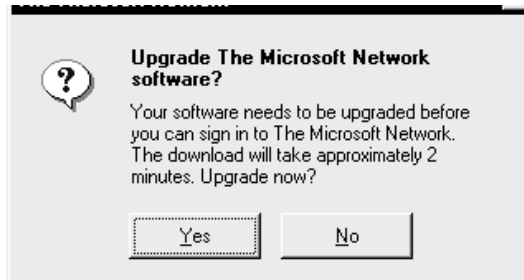
The screen you'll see each time you start MSN

Figure 19-3.



Tip: Click the “Remember my password” checkbox if you want to use the same password every time you log on.

After connecting with MSN again, you might see the following dialog box:



Click Yes to download additional updates to your MSN system and follow the instructions on the screen. If your files are updated, you’ll be logged off (yes, again) and will need to restart your computer to integrate the updates into your system.

Now you can log on to MSN by double-clicking the MSN object on your desktop. The dialog box shown in Figure 19-3 will appear to help you with the sign on.



Tip: If you click the Start button, then choose Programs and click The Microsoft Network, the window you see after login has a folder tree on the left similar to the folder tree in Explorer. Use it to traverse the folder structure of MSN.

Working Online

“Working” may be an inappropriate title for this section since exploring MSN hardly seems like work. Most users find themselves enthusiastically jumping from place to place as soon as they get used to the interface. Join a lively chat area when you’re feeling excited about a political issue or if you just feel like talking with people after hours.

After logging on you'll see the MSN Home Base similar to that pictured in Figure 19-1. You may also see the MSN Today page which provides information about MSN events and news.

When you're ready to log off MSN, choose Sign Out from the Home Base File menu. Alternatively, you can set the automatic log-off time by choosing Options on the Home Base View menu and setting the number of minutes that MSN can be idle before it logs off.



Tip: If you have call-waiting on the line you use to connect with MSN, the call-waiting signal can disrupt your connection. Disable call-waiting by choosing Connection Settings on the Tools menu in the Home Base window. Click Dialing Properties, then click the option to specify call-waiting and type the number to dial to disable call-waiting (usually *70).

Getting Help

If you have questions about an online service or you want to know more about MSN (or if you're just plain lost), you can get help in a number of places. Here are several methods for procuring help:

- ⇒ **Customer Service Chat** Choose Member Assistance from the Home Base window pictured in Figure 19-1.
- ⇒ **Chat Areas** You'll find chat areas in the various MSN categories. Refer to "Exploring MSN Categories" later in this chapter for more details.
- ⇒ **MSN Technical Articles** Read and download articles about MSN.
- ⇒ **FAQ (Frequently Asked Questions)** Read or download FAQs in many different areas of MSN.

Electronic Mail

You can exchange electronic mail with other MSN users and with other mail services through MSN. Microsoft Exchange (which is stored on your personal computer) is the primary mail handling system for MSN.

A copy of the MSN member list is available to you when you're online. When you find the name of the person you want to e-mail in the list, you can add it to your local address books so you can create and address future messages while working offline.



Tip: Use the procedures discussed in Chapter 15 to read messages, reply to messages, forward messages, and attach mail to messages.

MSN has the ability to download only the headers of e-mail messages. This can be a real time-saver if you receive a lot of mail. When you're connected, click E-Mail at the Home Base, then open the Tools menu and click Remote Mail. A window to display mail appears. Choose Connect and Update Headers from the Tools menu.

If you want to move or copy a message, double-click the message and choose Mark to Retrieve or Mark to Retrieve a Copy (a copy remains on MSN) on the Edit menu. Choose Transfer Mail or Connect and Transfer Mail (if not connected) from the Tools menu to transfer the messages to your computer.

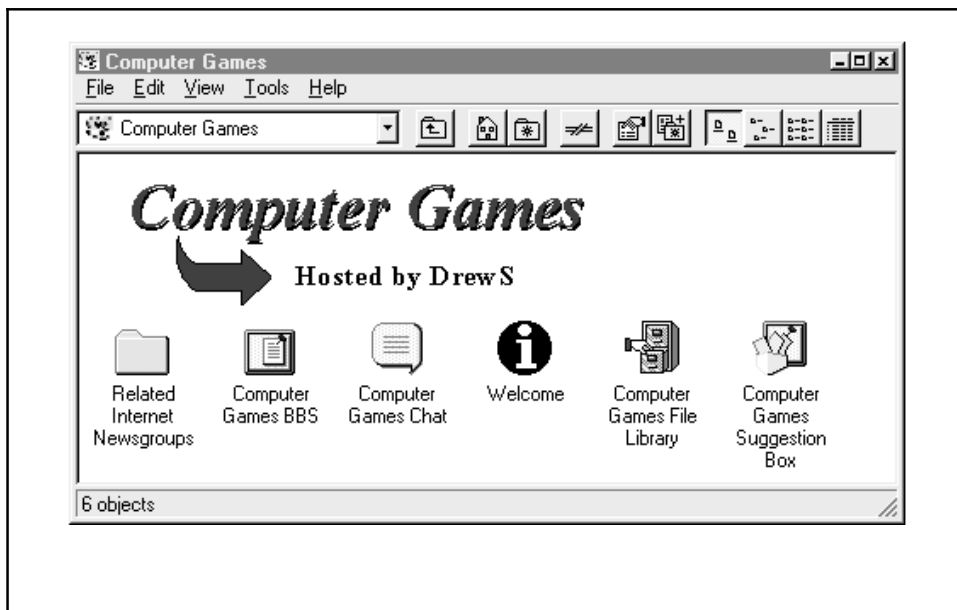
You can route e-mail messages through MSN to other mail services such as the Internet, CompuServe, America Online, and Prodigy. Simply compose an e-mail message as usual, then address the message using one of the following formats. MSN will route the message through to the other service.

Online Service	Address Format	Example
Internet addressing	<i>username@domain name</i>	tsheldon@iquest.net
America Online	username@aol.com	guitargeorge@aol.com

Prodigy	<i>username@prodigy.com</i>	acolgan@prodigy.com
CompuServe	<i>nnnnn,nnnn@compuserve.com</i>	75470,3702@compuserve.com

You should already know the e-mail address recipients on other services.

In most cases, follow the upper/lower case convention of the name. Use lowercase letters on Internet mail and the numeric address for CompuServe mail. For more information about Internet addressing, refer to Chapter 20.



A typical MSN category
Figure 19-4.

Exploring MSN Categories

The Categories area is where you'll spend most of your time on MSN. Table 19-1 shows a listing of common forums and a sampling of the subcategories they contain. Most subcategories contain subcategories of their own.

When you open a forum folder, you'll usually see information or kiosk objects. In Figure 19-4, note the Welcome icon. When you click this object, a file downloads to your computer and automatically opens in an appropriate application such as Microsoft Word or Windows 95 WordPad. You can then save the files to your own system or print them on your printer.

Figure 19-4 provides a good sampling of the types of objects you'll commonly see in forums. Here are brief descriptions of the

Arts and Entertainment

Art and Design
 Books and Writing
 Comedy Connection
 Movies
 Music
 Television and Radio
 Theater

Business and Finance

Business Services
 Jobs and Careers
 News and Reference
 Professions and Industries
 Small Office/Home Office
 Wall Street, The Markets, Investing

Community and Public Affairs

Advice, Support, and Sound Mind
 Armed Forces
 C-SPAN
 Cultures
 DisAbilities Forum
 Generations and Gender
 GoverNet: The Political Machine
 Journalism World
 Law Enforcement
 Legislative Information Center
 New Age
 Policy Debate
 Public Service
 Religion
 Senior Connection
 The White House

Computers and Software

The BBS Industry
 Computer Classified Ads
 Computer Games
 Computer Graphics
 Desktop Publishing
 Hardware
 Multimedia and CD ROM
 Software

Education and Reference

Colleges and Universities
 Computer Learning

Education
 Geography and Demography
 History and Archaeology
 Home Schooling
 Languages
 Microsoft Home Zone
 Nursing Network
 Philosophy

Home and Family

For Kids Only
 Genealogy
 Home Improvement
 Parenting in the 90's
 Pets
 Working Mothers

Lifestyles, Interests, and Leisure

Aviation
 Food, Wine, and Cooking
 Hobbies
 Mysteries and Phenomena
 Outdoor Sports and Recreation
 Photography
 Travel

Science and Technology

Amateur Radio
 Artificial Intelligence
 Astronomy and Space
 Aviation
 Biology
 Chemistry
 Electronics
 Engineering
 Environment
 Geology and Paleontology
 Math
 Medicine
 Physics
 Psychology
 Robotics

Sports, Health, and Fitness

Health and Fitness
 Indoor Sports and Recreation
 Outdoor Sports and Recreation
 Team Sports

Categories and
 Subcategories
 on MSN

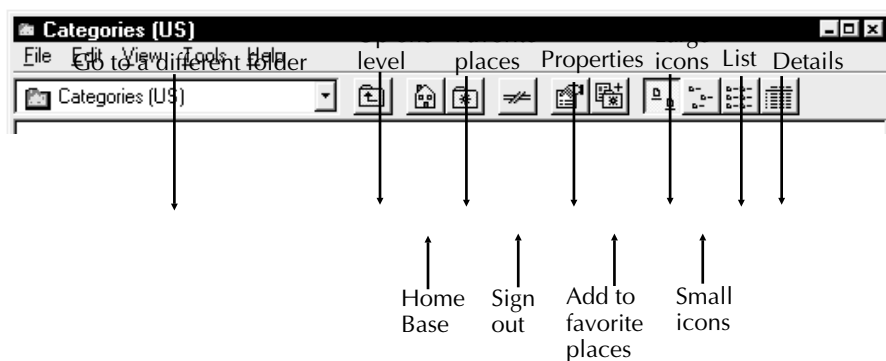
Table 19-1.

objects in

Figure 19-4:

- ⇒ **Related Internet Newsgroups** provides a list of Internet Newsgroups that contain information related to your current forum. When you select a newsgroup, you are connected to it over the Internet.
- ⇒ **Choose Computer Games BBS** to view and respond to bulletin board messages.
- ⇒ **Click on Computer Games Chat** to actively chat with other members, in this case about computer games.
- ⇒ **Click on Computer Gaming File Library** to see a list of files you can download to your computer.
- ⇒ **Click on Computer Games Suggestion Box** to send messages to the forum manager.

The buttons at the top of a forum window, shown in the following illustration, are fast ways to take care of the common tasks you need to perform in the window:

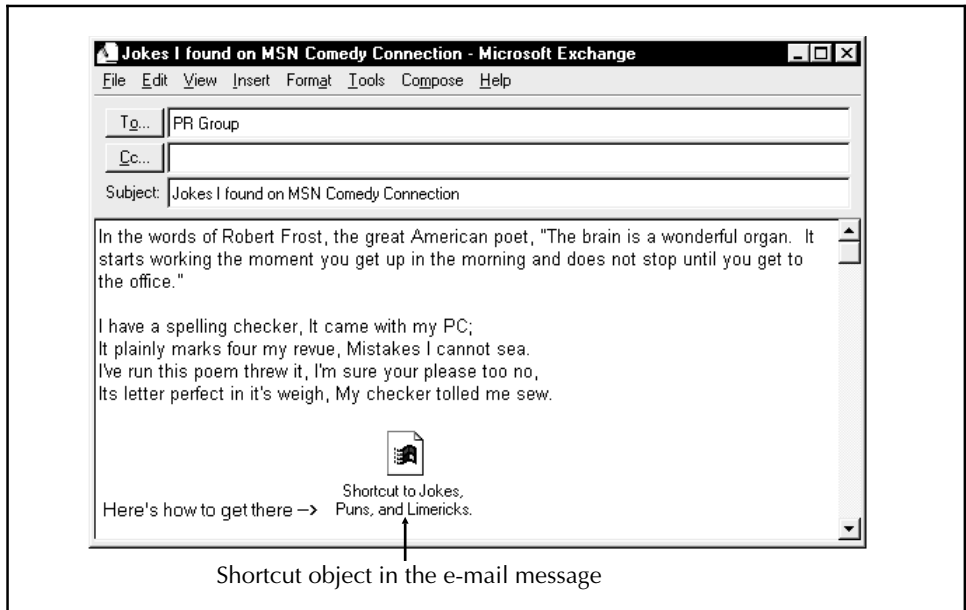


Fast Access to Your Favorite Forums

MSN makes it easy to get to the forums you use most often. Once you locate forums you want to visit, you can use the methods described here to quickly go to those forums in the future.

Creating Desktop Shortcuts By now, you're probably familiar with shortcuts. You can create shortcuts for MSN forums to quickly jump to those forums at any time. To create a shortcut, first go to the service you want to create a shortcut to, then choose **Create Shortcut** from the **File** menu.

Copy a shortcut to an e-mail message or other document so other users can quickly jump to the forum



Tip: You don't need to be online to use an MSN shortcut. When you double-click the shortcut, it logs you on and opens the correct forum.

One interesting trick with shortcuts is that you can copy or move them to other locations where you are likely to need access to the MSN forum. Let's say you find a few jokes that you like on the MSN Comedy forum. You write an e-mail message for your co-workers that includes these jokes and includes a shortcut to the comedy forum as shown in Figure 19-5.

You can copy or move shortcuts using drag and drop methods. Right-click an object and drag it over the folder or document where you want to put it, then release the mouse and choose an option from the menu that appears. Another method is to right-click the object you want to copy or move, then choose Cut or Copy from its context menu. Go to the place where you want to put the object and choose Paste from the Edit menu or press CTRL-V on the keyboard.



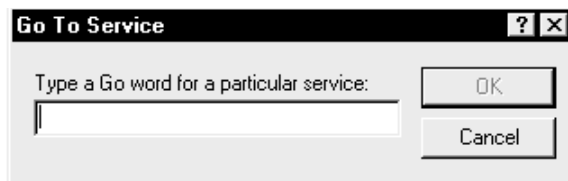
Note: You can right-click a shortcut and click Properties to display information about the shortcut.

Creating Favorite Places If you visit an MSN folder, chat room, or bulletin board often, you can designate it as a favorite place.

Favorite places are stored in your personal Favorite Places folder. Then when you click Favorite Places on the Home Base menu shown in Figure 19-1, you'll see all of your favorite places listed for easy access.

You can create a favorite place by first going to that place, then choosing Add to Favorite Places from the File menu. You can also click the Add to Favorite Places button on the forum's toolbar.

Go Words Go words are another way to quickly access a forum or service when you know the names of the places you want to go to. You might be referring to a forum name that someone gave you or a map of the MSN categories, similar to the listing in Table 19-1. Choose Go To on any MSN Edit menu, then choose either Home Base, Favorite Places, or Other Location. If you choose Other Location, you see the following dialog box where you can type the name of the service you want to access:



To find out the name of a place, first go to the window that contains the object you double-click to enter the forum, then right-click the object and choose Properties from its context menu. You'll see a Properties dialog box similar to the one shown in Figure 19-6. Write down the Go word ("generalhumor" in this case) you see in the second line for future reference.

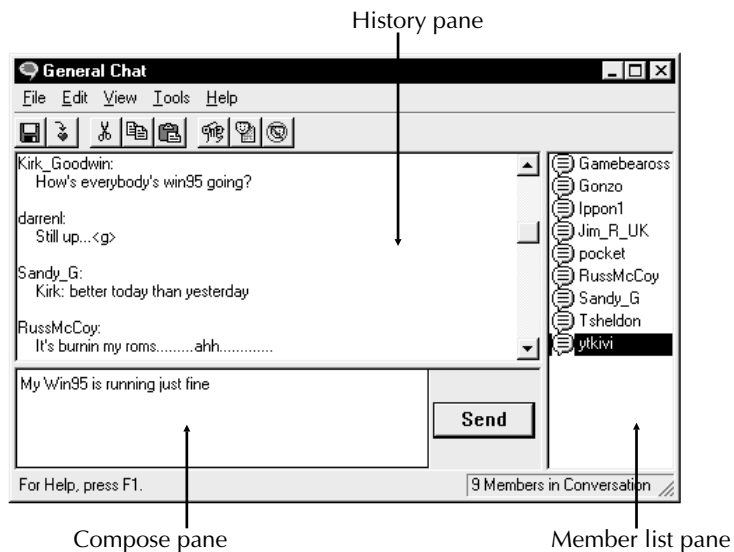
The Go word tells you the name of the forum you can use with the Go command

Figure 19-6.



An example of a chat room

Figure 19-7.



Online Conferencing in Chat Areas

Chat rooms provide a place where MSN members can hold live online typewritten conversations with other MSN members.

Figure 19-7 shows

an example of a chat room. You can join the conversation or just read the messages. Chat rooms, unlike bulletin boards, happen in real time. If you type a message, other participants see it immediately and can respond immediately. You can often get answers to pressing questions in a chat room related to a topic you are interested in. For example, the Computers and Software forum contains chat rooms for a variety of programs.

The chat window contains a chat history pane, a compose pane, and a member list pane. As members type messages, they appear in the chat history pane. A boldface message appears if a member joins or leaves the chat room.



Tip: You can suppress messages from some members if you find their conversation annoying. See Options for Chat Messages later in this section.

With MSN, you can't *lurk* (anonymously view a conversation) or participate with an obscure handle (name) because anyone can double-click your handle in the Member List pane to see your real name and other personal information.

In some chat rooms, your participation may be limited to the *spectator* role in which you can only view messages. In addition, some chat room might be monitored by a host who controls member participation. Chat room managers are indicated by a special icon in the Member List. You can contact the host at any time to report problems or make a special request like the ability to participate more fully in the chat room.



Tip: Parents can contact a chat room manager to have a chat room made off-limits to specific family members. If the chat

room doesn't have a host, contact the manager of the forum that contains the chat room.

Sending Messages in Chat Rooms

To send a message, type it in the compose pane and click the Send button

or just press `ENTER` on the keyboard. Two keystrokes you'll use often when typing messages are `CTRL-ENTER` (to start a new line) and `CTRL-TAB` (to indent a line).

It is common practice to use symbols to express emotion and abbreviations to reduce the amount of typing you need to do. (You may need to tilt your head to the left to see the symbols.) For example, you can type `:-)` at the end of a sentence to indicate that you are just kidding, `:O` to indicate yelling, or `:-(` to indicate a frown with a tear. Common abbreviations are `IMO` (in my opinion), `LOL` (laughing out loud), and `ROTFL` (rolling on the floor laughing).

Options for Chat Sessions

You can block messages from annoying or overly-talkative members. For example, if a participant is talking about the

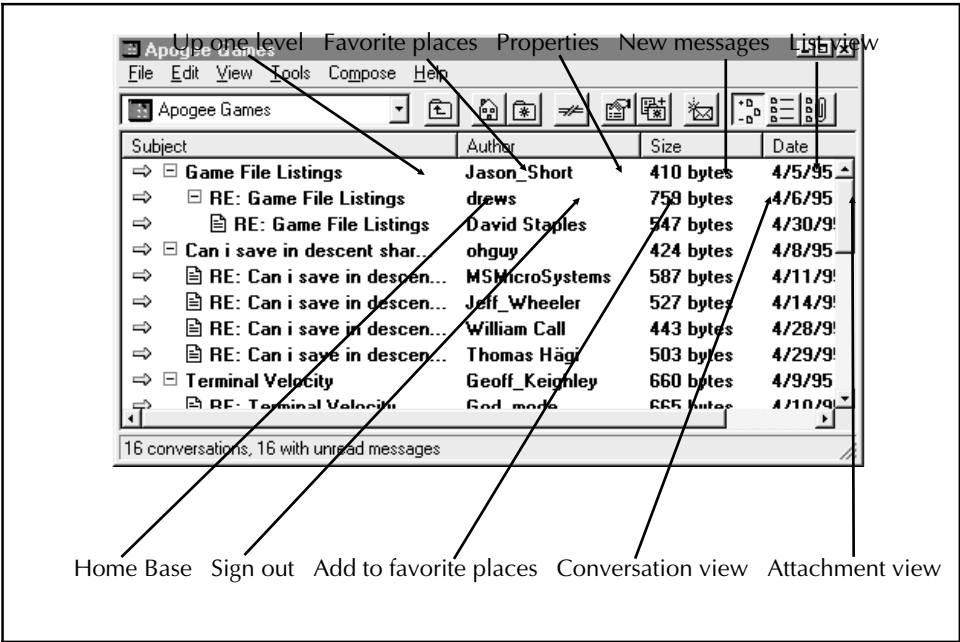
double-overhead cams in his newly rebuilt engine, you can just switch him off. Select the member you want to block in the member list pane, then click the Ignore button on the toolbar. A line appears through the names of members you are ignoring. Alternatively, you can choose Member Settings on the View menu and click "Ignore members."



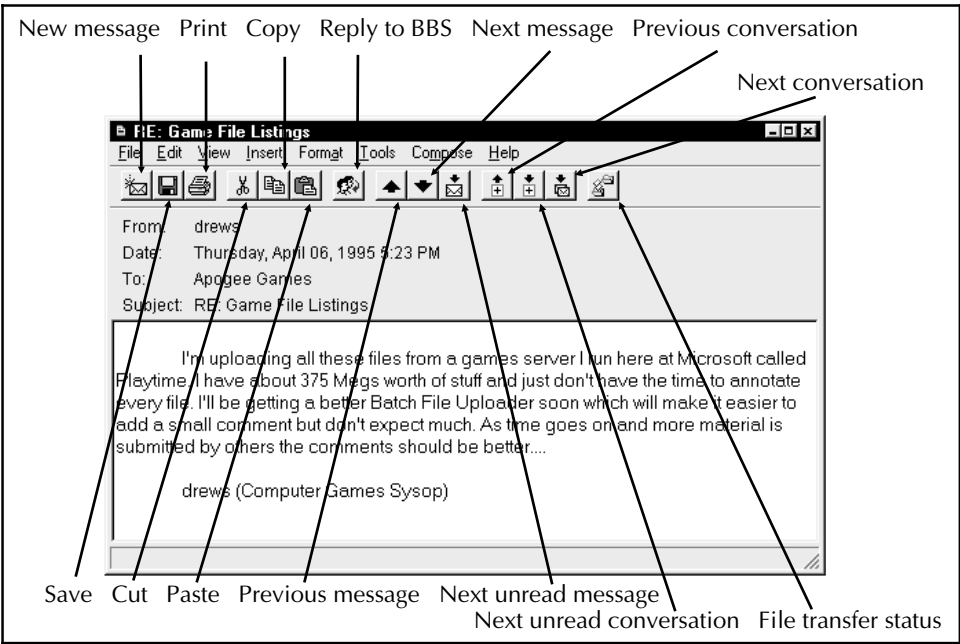
.....
Cauti**on:** Keep in mind that other chat members won't know you're ignoring them. They may try to send you an important messages that you won't see.

When members join and leave the chat room, a message appears in the chat window to keep you informed of who is participating. If you find these messages annoying, you can switch them off. Choose Options on the Tools menu, then set the options in the "Notify me when" field the way you like.

A bulletin board window with expanded messages
Figure 19-8.



A typical bulletin board message
Figure 19-9.



Saving Chat Dialog

You can use cut and paste techniques to copy text from the chat history pane to the compose pane if you want to repeat what someone else said.

You can also copy the text to a document in another program window. Simply drag through the text to highlight it, then press CTRL-C to copy it and CTRL-V to paste it elsewhere.



Note: The chat session history that you see starts when you log on to the chat room. You won't see any of the history prior to your entry. To clear chat history, click Clear History on the Edit menu.

To save the entire history of a chat session for later reference, click the Save History option on the File menu. Be sure to choose Rich Text Format (RTF) in the Save window to retain all the formatting. To automatically save a chat session, choose Options on the Tools menu to display the Options dialog box, then select "Save chat history before clearing or exiting." You can then choose to save the chat history when you exit.

Bulletin Board Systems (BBSs)

A MSN bulletin board is a place where you can post electronic messages that other MSN members can read and respond to. Unlike chat rooms where members interact in real-time, bulletin boards contain posted messages that members read and respond to whenever they want. The messages might remain on the bulletin board for days or weeks. As members respond to a message and their responses are responded to, a "message thread" is created. The Explorer interface of MSN provides a unique way to read message threads by letting you expand or collapse individual message threads.

Figure 19-8 depicts a typical bulletin board window. Note the first and second items in the window. The second item is indented under the first to indicate that it is a response to the first item. Large message threads will have several different levels of responses under the original message.



Tip: You can refresh the message window to display messages that have been posted since you logged on by choosing **Refresh** from the **View** menu.

You can view any message by double-clicking it to open a window similar to the one shown in Figure 19-9. You can then work your way through the thread of messages related to it by clicking the buttons on the toolbar.

Bulletin boards are usually public, but some may be private or restrict what you can do while online. Some bulletin boards contain a related file library where you can download files to your computer.

Changing How Messages Are Listed

You can change the view of a BBS window like the one shown in Figure 19-8 by clicking one of these buttons on the toolbar:

- ⇒ **Conversation view** This view shows the sequence of a message thread. Choose **Expand all Conversations** on the **View** menu to see all the threads of all the main messages, or choose **Collapse all Conversations** to see only the main messages. The following icons designate message types:



Click to expand replies



Replies are already expanded, click to collapse



No replies to this message



Indicates an unread conversation

- ⇒ **List view** Displays all messages so you can sort them by subject, author, or date. This view provides a way of looking at messages that is different than the thread view you get in the Conversation view mode.
- ⇒ **Attachment view** Displays only messages that have attached files. A file library lists its files in this manner.



Tip: You can sort the order of the messages by clicking the button above the Subject, Author, Size, or Date column.

How to Read Messages

As mentioned, you double-click a message to view its contents. Then you can follow message threads or jump to other message threads as described below. Refer to the message window shown in Figure 19-9 to see the buttons at the top of the window, described here:

- ⇒ Click the Next Message, Previous Message, or Next Unread message button on the message window to jump between messages in the same thread.
- ⇒ To jump between conversations in the current forum, click the Next Conversation, Previous Conversation, or Next Unread Conversation button on the toolbar.
- ⇒ Use the keyboard combinations listed in Help to jump among messages.

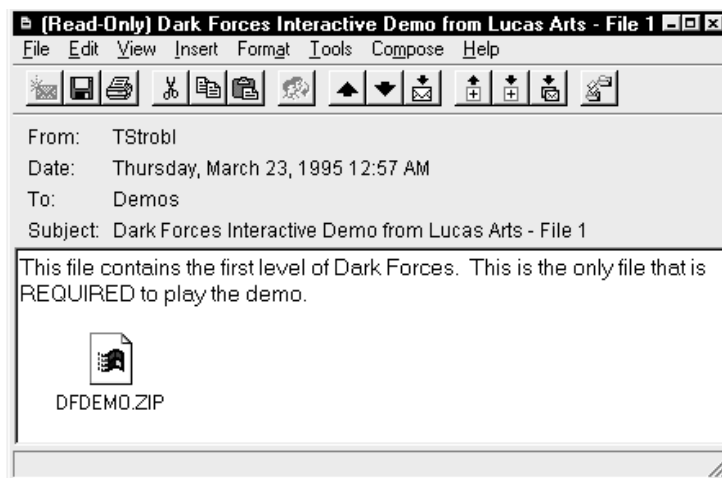
If you want to read a message offline, double-click the message to open its window, then choose Sign Out from the File menu. The message window stays open while MSN logs out. Now you can save the message on your system, print it, or copy text from it using options on the File and Edit menus.

How to Compose and Post a Message

You can create new messages for bulletin boards while you are online or while working offline. You can also respond to existing messages by first opening the message you want to reply to. Here are several techniques for creating and posting messages:

- ⇒ **Compose a new message** To compose a new message while working online, Choose New Message from the Compose menu. If the bulletin board is *read-only*, you won't see this option since you can't post messages to it. Fill in the Subject area, then type your message in the message area. You can attach files by clicking the paper clip button on the toolbar or choosing File or Object from the Insert menu.
- ⇒ **Reply to an existing message** To reply to an existing message, first make sure the message you want to reply to is open, then choose Reply to BBS on the Compose menu. Type a response in the message area and choose Post Message on the File menu.

You must open a message to see the file object within it
Figure 19-10.



- ⇒ **Reply or forward by e-mail** Choose this option to reply to or forward a message directly to another person's mail box, rather than posting the message on the bulletin board.
- ⇒ **Offline message composition** You can save money by working offline. To compose a message while working offline, first open the window for the bulletin board where you want to post the message or reply to a message, then choose Sign Out from the File menu. Create a new message or a reply to an existing message as described above, then choose Post Message from the File menu to reconnect with MSN and post the message.

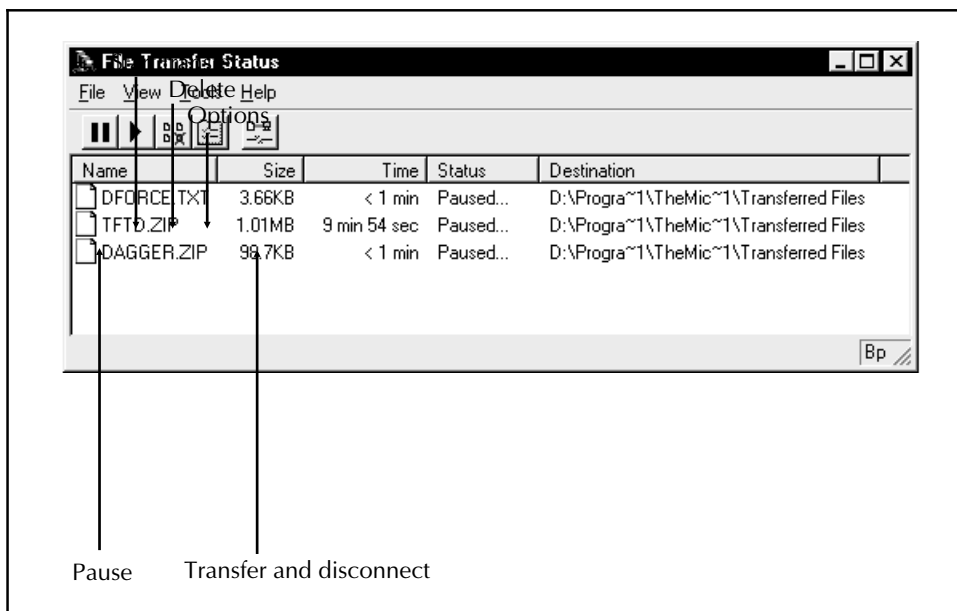
Messages posted on bulletin boards are stamped with the Greenwich Mean Time (GMT) at MSN, not at your computer. However, when you view message posting, MSN adjusts the times based on your local time. Therefore, it is important that you choose the correct time zone and set the proper daylight saving time adjustment in the Control Panel's Date/Time utility.

File Transfers and File Libraries

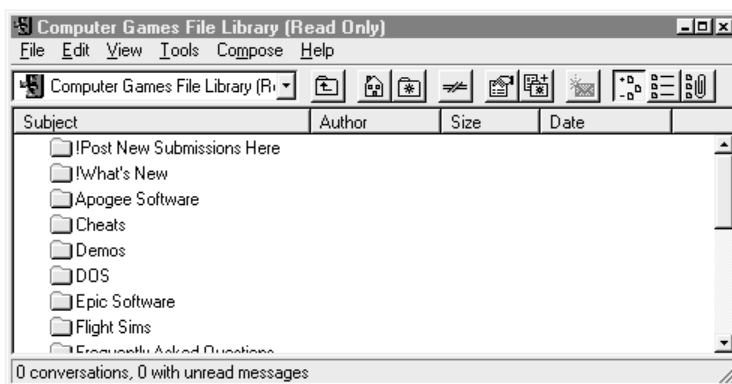
The Microsoft Network provides an excellent place to exchange files with other people. You can attach a file or files to an e-mail message and send it to an MSN member. If you want to make the file available to many MSN members, you can post a message with the file attachment in a bulletin board.

The File
Transfer
Queue

Figure 19-11.



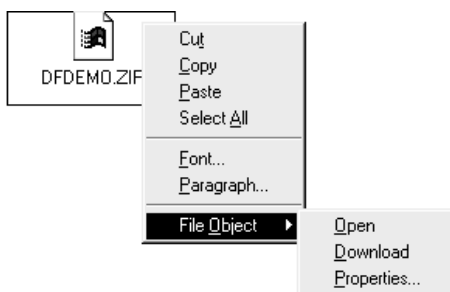
Bulletin boards are the most common place to find public files that you can download to your computer. Common files include public domain utilities, programs, multimedia files, and information documents. Files are typically organized into file libraries, although you'll also find files attached to messages. A typical file library with multiple categories is shown here:



When you double-click a category in the Subject column, a list of files related to that category appears. The author, size, and date of the file are listed next to the filename. You can sort on these columns by clicking the button at the top of the column that holds the column's name.

To view information about any file in the listing or to download it, double-click the file. A window similar to Figure 19-10 appears. Notice that the file contains text and an icon that represents the file to download.

To view information about the file or to copy the file to your system, right-click the object, click File Object on the context menu, then click either Properties or Download from the menu shown here:



You can also copy a file to your computer by clicking the file and choosing Save from the File menu of the message window. In this way, you can choose the drive and folder where you want to copy the file. If you choose Download from the context menu, the file is copied to a default directory which you can change at any time as discussed next.

The Transfer Queue

When you transfer a file from a bulletin board to your computer, it goes into the Transfer Queue. You can view the Transfer Queue by clicking the File Transfer Status button on a message window's toolbar or choosing File Transfer Status from the Tools menu. A window similar to Figure 19-11 appears.

All the files in Figure 19-11 are paused so they can be downloaded later when you're through working online. You can set an option (discussed below) so that all files are paused as you put them in the queue. Then click the Transfer and Disconnect button when you're finished working online. This starts an automatic transfer process in the background and disconnects your computer once the files are transferred.

If you don't set the pause option, files start downloading immediately, but you can click the Pause and Start buttons on the toolbar to control file transfers.

You can also click a file and click the Remove button to remove it from the download queue.

Click the Option button or choose Options from the Tools menu to display the File Transfer Options dialog box. This is where you set download options and change the directory to which you want to download files by default:

- ⇒ To pause file transfers as they enter the queue, click the “Pause files as they are queued” option.
- ⇒ Set compression options in the Compressed files field.
- ⇒ In the Default download folder field, choose the folder on your computer where you want to download files. Click the Browse button to select a drive and folder on your computer.

You can control how compressed (zipped) files are handled on your computer after they are transferred by setting options in the Compress files field. To automatically decompress files after they are transferred, click the Automatically decompress files option. To delete the compressed file (usually .ZIP) after compression, click the Delete compressed file after decompressing option.

Posting a Message with a File Attachment

You can post a message with file attachments on bulletin boards by first composing a message in Microsoft Exchange, then attaching a file to the message, and finally posting the message in a MSN bulletin board area. Follow these steps:

1. Go to the bulletin board where you want to post the message, then choose New Message from the Compose menu.
2. Type the text in the message area and click where you want to insert an object or file.
3. Choose Insert from the File menu, then locate the file you want to insert using the Browse dialog box.
4. Click Insert and Close.
5. Choose Post Message from the File menu.

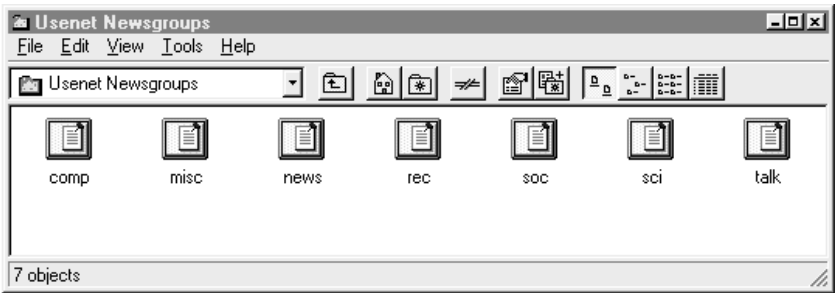
Internet Access

The Internet (see Chapter 20) has *newsgroups* that are similar to MSN bulletin boards. You can access Internet newsgroups through MSN.

Microsoft has organized Internet newsgroups into the category folders of MSN so you can usually find the newsgroups that interest you in a very short time. In Figure 19-2, you can see the Internet Center icon. If you double-click this icon, you'll see a folder called Newsgroups. If you open that folder, you'll see a list of Internet-related categories like the one shown in the following:



If you double-click Usenet Newsgroups, you get a selection of newsgroup categories similar to the one shown here:



These topic types are described in the following table. Note that many other topics exist but may not be available on MSN.

Category	Topics
comp	Computers
misc	Miscellaneous topics that don't fit into other categories

Category	Topics
news	News about the Usenet Newsgroups
rec	Recreational information, hobbies, art
sci	Science topics
soc	Social issues
talk	Debates on controversial and noncontroversial issues

If you double-click one of these categories, you'll see a long list of related topics. If you open one of these newsgroups, you'll see more categories or message postings just as you do when working in MSN bulletin boards. The advantage of accessing Internet newsgroups through MSN is that you get to use the same interface you use when working in MSN bulletin boards.

Connection and Account Information

Figure 19-9.

\sasy

Connection Settings Return to the Home Base window, then choose Connection Settings from the Tools menu. You can change the local access numbers, dialing properties, and modem settings. Choose Options to display a dialog box where you can set the time MSN is active before it shuts down due to lack of use. You can also disable the MSN Today title page that appears when you first log on and change the language setting.



Note: In the dialing properties field, you can change your default location so you can dial from other locations.

Billing Option You can change your name and address information, credit card information, or other subscription options by choosing the Billing option on the Tools menu. The following options appear:

⇒ **Payment Method** Change your name and address or credit card information.

- ⇒ **Summary of Charges** See a summary of the charges you have incurred while using MSN.
- ⇒ **Subscription** See information about your subscription and credits.

The Internet is a global interconnected “web” of computers and computer networks. Schools, libraries, businesses, hospitals, federal agencies, research institutes, and other entities are connected to the Internet and most make their systems available to the public. The underlying connections include the dial-up telephone network and satellite and ground-based microwave links. The actual network cannot be mapped at any one time because new computers and networks are constantly added and the electronic pathways for information are constantly changing.

Although the Internet was originally conceived as a communication network for researchers, primarily military, today it is used by literally millions of people in business, in education, or for just plain communication. It is estimated that the Internet has over 7,500 networks with over a million host systems that support mail exchange between as many as 25 million people. These numbers are expected to double over the next few years.

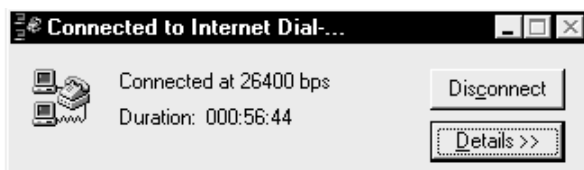
Electronic mail services are available on the Internet so people can send messages to one another. You can also access public and private information services over the Internet. Your access to some of these networks may be free and unrestricted, may depend on access privileges, or may be quite expensive. The network itself is built on the national and global telecommunication system, both public and private.

You can access the Internet in several ways, each described here:

- ⇒ Connect with an online service such as CompuServe, America Online, or the Microsoft Network and access Internet sites while you are logged on. The Microsoft Network provides the easiest way for beginners to access the Internet. Refer to Chapter 19 for details.
- ⇒ If the computers in your organization are already connected via a network, that same network might also be connected to the outside world through the Internet. If this is the case, you won't need to attach a modem and dial out since your Internet connection is routed through your company's network. Ask your network administrator for more details.
- ⇒ Use a modem to connect to an *Internet service provider* in your area. A service provider acts as your *sponsor* on the Internet. It typically maintains a 24-hour connection to the Internet via a special computer system and sells connection time to other people. Connecting with a service provider is easy with the Windows 95 Dial-Up Networking utilities.

This last type of service often confuses people. Users wrongly assume that once they log onto the Internet service provider, menus and navigation utilities appear on their screen (the way that they do in regular Windows).

In fact, in Windows 95, you see only the following dialog box once you've connected with your service provider:



The dialog box indicates that a link exists between your computer and the service provider's computer, which itself is connected to the Internet. Once you've gotten this dialog box you can start any one of a variety of Internet programs that help you navigate the Internet. When you start such a program, it detects the link between your computer and the service provider's computer. The link to your service provider is like a shuttle bus that takes you to an airport where you can fly out to any destination you like.

The programs you run when working on the Internet provide the interface you use to quickly link to different Internet sites and then view the information on the computers at those sites. These programs are discussed under "Internet Utilities and Services" later in this chapter. When you link to another Internet site, a connection is made that is very similar to the connection you make when making a phone call to another person, except that the process is hidden in the background. You don't need to worry about long-distance charges in most cases because most service providers bill you a flat rate that covers any connections you might make.



Note: The next few sections describe how to set up a dial-up connection with a service provider. If you connect with the Internet through your company's network, refer to "Internet Utilities and Services" later in this chapter.

Service Providers

There are basically three levels of service available from most service providers, depending on the type of Internet services you need and the level of connection.

- ⇒ Basic Internet electronic mail exchange only.
- ⇒ Terminal connections in which you obtain the full range of Internet services, but you use the services through your service provider's computer, which does all the work of executing Internet commands,

storing downloaded files, and other related tasks. In this case, your computer is more like a “viewer” that lets you watch what the other computer is doing.

- ⇒ Interactive connections that let you execute Internet commands directly from your computer. This type of connection requires that you install the TCP/IP (Transmission Control Protocol/Internet Protocol) protocol under Windows 95, then establish a PPP (Point-to-Point Protocol) connection with your service provider. PPP allows you to transmit TCP/IP data packets over the phone connection to the service provider. Thus, your computer has full TCP/IP connection with the Internet. (This is explained further in the “What is TCP/IP?” section later in this chapter.)

Windows 95 provides all the communication protocols you need to obtain this third level of service. The TCP/IP protocol and the Dial-Up Networking services may already be installed on your computer and ready to run. If not, this chapter will show you how to install and configure the components and create dial-up connections to the Internet. You’ll need a modem and you’ll need to contact a service provider in your area to obtain a user account, username, password, and other information related to making TCP/IP connections over PPP.

Choosing a Service Provider

You choose an Internet service provider based on the area they service, the services provided (Archie, e-mail, FTP, Gopher, news, Telnet), and the cost of the services. For a complete service provider list, contact InterNIC Information Services in San Diego (800-444-4345 or 619-455-4600). Many service providers can give you account information right over the phone so you can connect with their system within a day. Other providers require two to three days to process your information. Some providers bill you directly whereas others have your connection charges added to your phone bill.

There are probably a few service providers in your area that can supply you with a local phone number and very competitive rates. Look in the Yellow Pages under Computer Services or contact a local university, computer store, or computer consultant. Note that many universities will provide you with Internet accounts as a public service or at a low rate.

History Buffs' Introduction to the Internet

The Internet grew out of a U.S. Department of Defense project called ARPANET (Advanced Research Projects Agency Network). ARPANET was put into place in 1969 as a pioneering project to test packet-switching networks. It provided links between researchers and remote computer centers. In 1983, the military communication portion of ARPANET was split off into MILNET (Military Network), although cross-communication was still possible. ARPANET was officially dismantled in 1990, but its successor, Internet, still continues to grow and now services millions of computer users.

Internet provides connections to other networks, like UUCP (UNIX network), BITNET (academic and research network), and others. Internet also provides connections to global networks, such as those in Australia, Europe, Japan, and South America. In addition, other commercial information services such as CompuServe now provide connections on to the Internet.

The NREN (National Research and Education Network) is the backbone data network of the Internet, administered by the National Science Foundation. It succeeded the NSFnet (National Science Foundation network) as the major Internet network for research and education in the United States, as of the signing of the "High-Performance Computing Act of 1991," a bill sponsored by then-senator Al Gore. It calls for a high-capacity (gigabits-per-second) network and the coordination of networking efforts among federal organizations.

The NREN is designed to connect K-12 schools, colleges, universities, libraries, health care industries, business, and manufacturing into a national public network using the Internet. The Internet provides vast quantities of timely and useful information to these institutions over existing telecommunication links. Access is obtained using standard desktop computer equipment and modems, or connection to networks that are connected to the Internet.

Funding for the Internet comes from many sources. The United States government funds major Internet backbones (primary communication pathways) that lower-level public and private networks attach to. For example, the National Science Foundation controls the nationwide backbone for education and research; however, it does not control the attached networks. There are also backbones for military and space-related research organizations. Coordination is handled by the Federal Networking Council (FNC).

The Internet Activities Board (IAB) coordinates the design, engineering, and management of the Internet. It has two main committees:

- ⇒ *Internet Engineering Task Force* (IETF) This committee specifies protocols and recommends standards.
- ⇒ *Internet Research Task Force* (IRTF) This committee researches new technologies and recommends them to the IETF.

Setting Up Internet Connections

This section describes how to connect to the Internet using the Windows 95 TCP/IP and PPP services. It assumes that you are making a full Dial-Up Networking connection to an Internet service provider. The following steps are merely an overview of how you'll connect to the system—read on for more details.



Note: Appendix D describes the optional Microsoft Plus! pack, which includes optional Internet setup tools and programs.

1. Install and configure a modem with the Modem utility in the Control Panel as discussed in Appendix C.
2. Choose an Internet service provider that can provide you with PPP connections for your computer.
3. Obtain the following account information from the service provider. Note that an IP address is the IP portion of TCP/IP:
 - ⇒ User name and password
 - ⇒ The telephone number you dial to access the service provider
 - ⇒ Your host and domain name

- ⇒ A dedicated IP address for your computer, or the IP address of a DNS server where you obtain an IP address when you log on
 - ⇒ A gateway IP address if you use a dedicated IP address
4. Make sure Dial-Up Networking is installed. If it is, you'll see a folder called Dial-Up Networking in the My Computer window. If not, refer to Chapter 17.
 5. Install support for TCP/IP with the Networks utility in the Control Panel as outlined in the next section "What Is TCP/IP?"
 6. Configure the TCP/IP dial-up connection with the TCP/IP information provided by your service provider.
 7. Configure a Dial-Up Networking session to connect with your service provider.
 8. Connect with the Internet service provider, then run any Internet utility or program that helps you navigate and have fun on the Internet.

The next few sections provide more detail about setting up TCP/IP and your Internet connection.

What Is TCP/IP?

The Internet consists of thousands of interconnected communication pathways that include telephone lines, satellite links, and microwave transceivers. These links are shared and your computer sends data over the same lines as many other computers. This is possible because each computer divides up and packages the information it is sending into *packets*. If you could see packets, they would remind you of cars on a freeway, all sharing the same highway but each headed for a different destination. Every computer on the Internet has a potential connection to every other computer on the Internet. TCP/IP basically defines what the data packets look like, how to assign addresses to computers, how to address packets, and how to make sure that the packets get to where they need to go over the Internet.

Internet and TCP/IP Addressing

Every computer attached to the Internet has a specific numeric address and is normally assigned a special name that humans can easily comprehend. For example, my *current* Internet address is

tsheldon@iquest.net

You pronounce this "tsheldon at iquest dot net." "iquest" is my service provider and "net" indicates the type of provider. Deep down in the

computer system is a numeric address like 192.70.36.70 or some similarly arranged number. Fortunately, you rarely need to deal with the numeric code because every system or person you'll communicate with on the Internet has one of the human-readable names. The translation of the numeric address to the human-readable address is handled by an Internet service called the Domain Naming Service (DNS).

You need to know a little about DNS and Internet addressing because your service provider will give you related information that you need to type in the setup dialog boxes discussed in the following sections. The numeric address is a 4-byte numeric value that identifies both a network and a local host or node on the network. Each IP address must be unique and consist of four decimal numbers separated by dots, such as 191.31.36.70. Your service provider assigns you a numeric Internet address in one of the following ways:

- ⇒ You get a *dedicated* numeric address that you type in the IP address field when configuring TCP/IP, as discussed later.
- ⇒ Your service provider tells you to set an option called DHCP which automatically gives you an IP address every time you log on. This is the usual method because it makes the address available to other users when you log off, thus conserving addresses.

Your main concern is the DNS name assigned to you by your service provider. This is what you give to friends and have printed on your business card. You'll use the name when addressing e-mail messages or connecting with other systems on the network.

All Internet names have the two elements shown here:

local@domain

where *local* is a name that identifies you at the domain and *domain* is a name that typically specifies your service provider (iquest.net in my case), but it might also specify a university, company, or other organization. If your company has an internal TCP/IP network, the domain name is part of every host address in the network and is combined with a type code that represents the type of organization. Table 20-1 lists the most common type codes.

When creating individual users names, it is common to use the initial of the first name combined with the entire last name. Another method might be to

Internet
Domain Type
Codes

Table 20-1.

Code	Type of Organization
.com	Commercial organization
.edu	Educational institution
.gov	Government organization
.int	International organization
.mil	Military
.net	Networking organization
.org	Nonprofit organization

use the first seven digits of the last name. To address an e-mail message to someone, you tack the e-mail name onto the Internet host name in the form shown here:

username@host

where *username* is the identification or mailbox of the recipient and *host* is the computer and/or host or domain name. For example, this address:

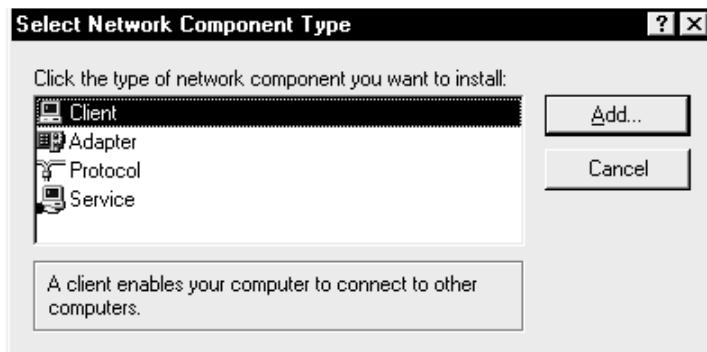
tsheldon@iquest.net

identifies my username, host network, and organization type.

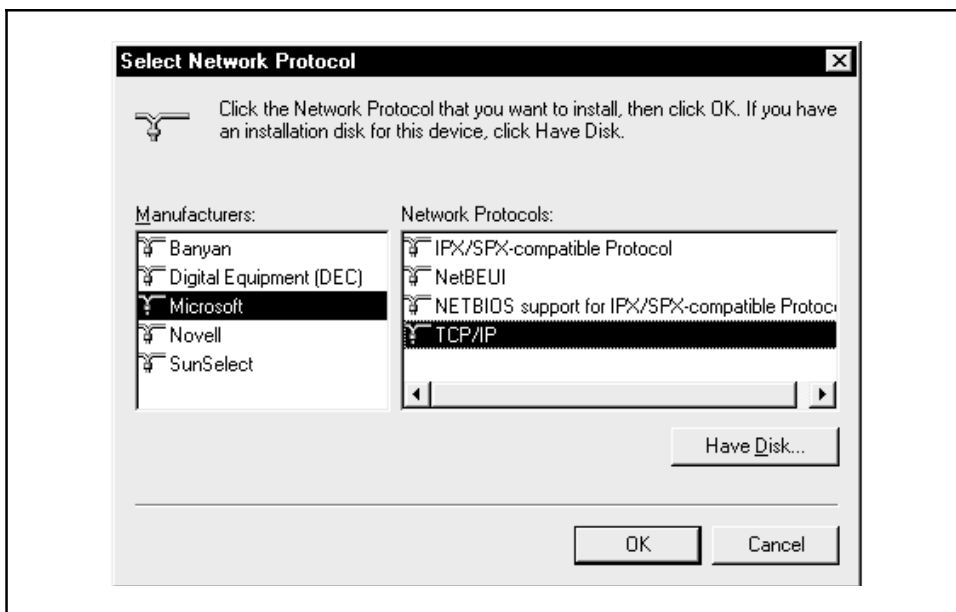
Configuring Windows 95 TCP/IP Services

Once you set up an account with your service provider and have all the appropriate IP addresses and/or domain information, you can set up TCP/IP on your system. (The following steps assume you need to install the TCP/IP support from disk, but if it's already installed on your system, skip steps 1 through 4.) To install TCP/IP follow these steps:

1. In the Control Panel, double-click the Networks utility.
2. When the Networks utility opens, click the Add button on the Configuration page. The following dialog box opens:



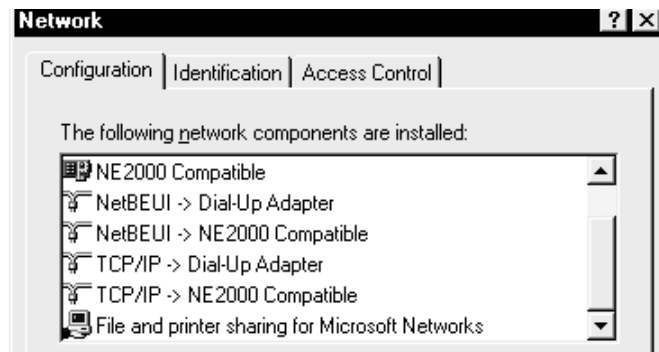
3. Click the Protocol option, then click the Add button. You'll see the Select Network Protocol dialog box shown in Figure 20-1.
4. Click Microsoft in the left pane, then click TCP/IP in the right pane, and finally click the OK button to begin installation. You'll be



Installing
TCP/IP
components:
Choose
Microsoft
Figure 20-1.

prompted to insert your Windows 95 CD-ROM or floppy disks into an appropriate drive.

If you previously attempted to use Dial-Up Networking, a dial-up adapter has already been added to your network configuration. You'll see TCP/IP -> Dial-Up Adapter on the Configuration page of the Network dialog box as shown here:



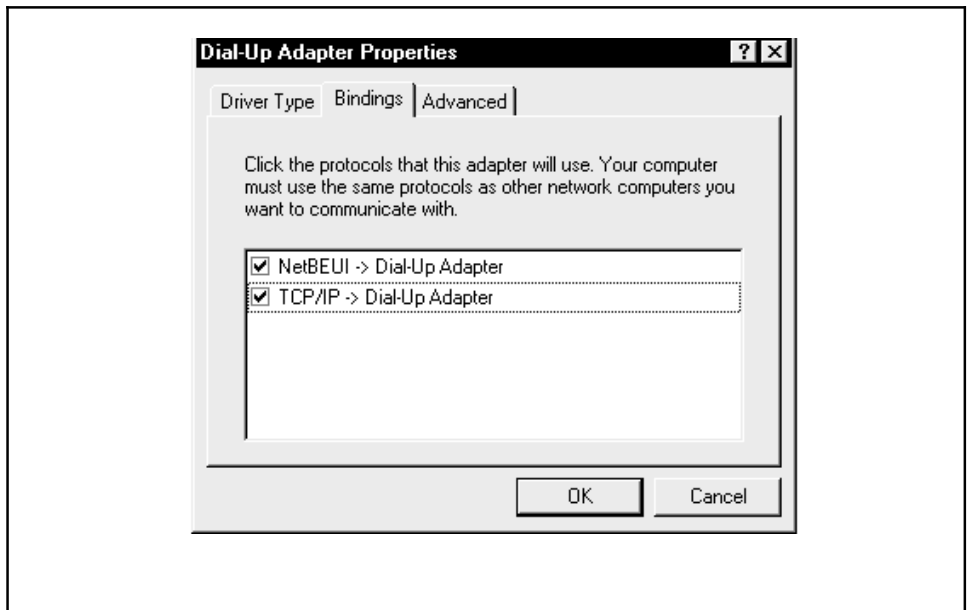
If you haven't installed Dial-Up Networking, refer to Chapter 17 and the next section.



Caution: Be sure to select the TCP/IP -> Dial-Up Adapter for this configuration and not the TCP/IP connection for your network card.

Double-click the TCP/IP -> Dial-Up Adapter entry and in the dialog box that appears, click the Bindings tab to bring up the Dial-Up Adapter Properties dialog box shown in Figure 20-2. In this case, a checkmark indicates that

Installing
TCP/IP
components:
Check the
bindings
Figure 20-2.

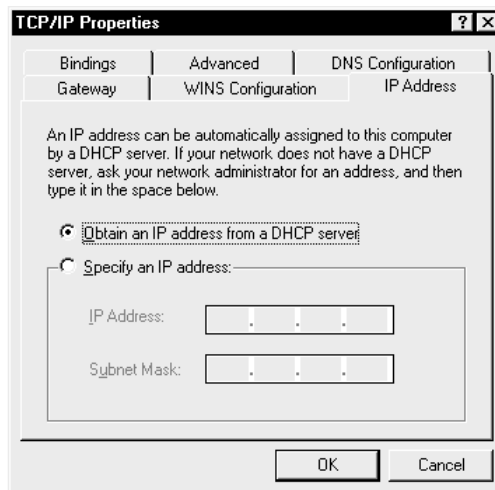


TCP/IP is bound to the Dial-Up Adapter. If you don't see a checkmark on your system, be sure to click the box to mark and enable it.

Now you need to configure the IP address and other TCP/IP settings for the Dial-Up Adapter. Follow these steps:

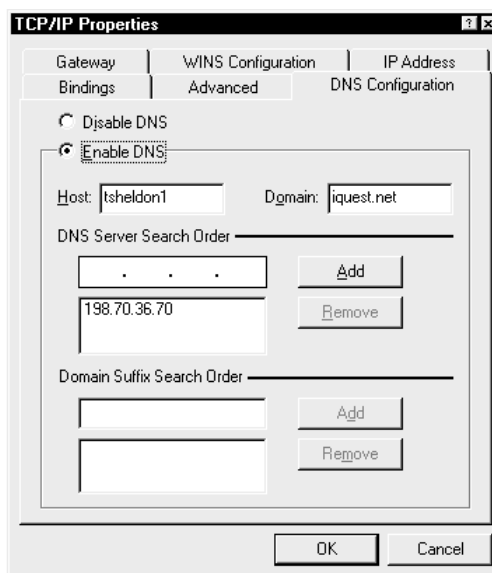
1. Return to the Configuration page of the Networks dialog box. It should look like the Configuration page pictured on the previous page, with the new entry TCP/IP -> Dial-Up Adapter.
2. Click the TCP/IP -> Dial-Up Adapter entry and click the Properties button. You'll see a dialog box similar to the one pictured in Figure 20-3 where you can do either of the following tasks:
 - If your service provider uses DHCP, which assigns you an IP address when you log on, click the Obtain an IP address from a DHCP server button.
 - If your service provider gave you a specific IP address, click the Specify an IP address button, then type the address in the IP Address field. If you received a Subnet Mask number, type it in the lower field; otherwise type **255.255.255.0**.
3. Click the DNS Configuration tab to open the TCP/IP Properties dialog box shown in Figure 20-4 to specify domain name information.

Changing
TCP/IP settings
for the
Dial-Up
Adapter
Figure 20-3.



20

Specify the
Domain
Naming
Service
information
Figure 20-4.





Note: Type Internet names in lowercase, otherwise you won't get a proper connection.

4. Click the Enable DNS button.
5. Type your Internet name in the Host field and your service provider's domain name in the Domain field.
6. In the DNS Server Search Order field, type the numeric IP address of your service provider, then click the Add button. This places it in the lower field. You can type additional addresses if any others were given to you.



Note: If you are connecting with the Internet through your organization's Internet connections, specify the address of your local DNS server in the DNS Server Search Order field.

7. Click OK to complete the TCP/IP configuration.

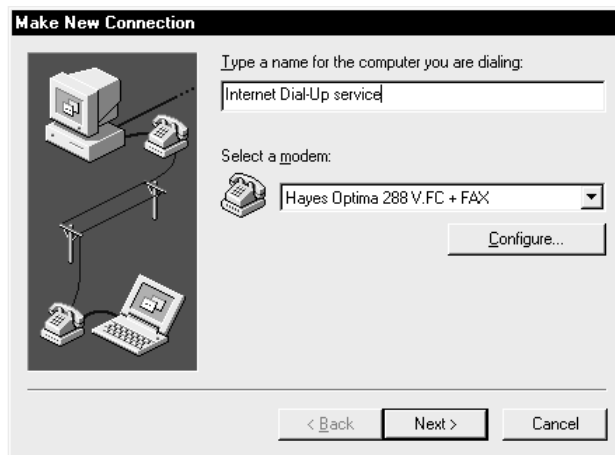
You'll need to restart Windows 95 to enable the new configuration. The last step before actually dialing is to configure a Dial-Up session, discussed next.

Configuring a Dial-Up Networking Session

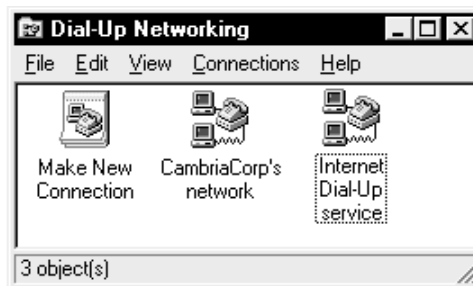
Here are the steps to configure an Internet dial-up connection. These steps assume the Dial-Up Networking Support files are installed on your computer.

1. Open the My Computer window, then double-click the Dial-Up Networking folder to open it.
2. Double-click the Make New Connection object. The Make New Connection wizard pictured in Figure 20-5 appears with a list of modems you can use on your computer.
3. Type a name in the top field that describes what this connection does (for example "Internet dial-up connection") and then click the Next button.
4. In the next wizard box, type the phone number that your service provider gave you to use when dialing in.
5. Click Next, then click Finish to complete the operation.

Choosing a modem for the dial-up connection in the Make New Connection dialog box
Figure 20-5.



You should now see a new object in the Dial-Up Networking window for your new Internet connection, similar to the one shown here:



You need to do two more things before you can log on. The first is to specify that you want a terminal window after logging on, if your service provider requires that. The second is to specify the TCP/IP protocol for the connection. Follow these steps:

1. Right-click the object you just created, then choose Properties from its context menu.
2. On the General page, click the Server Types button to display the dialog box shown in Figure 20-6.

3. Set the options in this dialog box as follows, then click OK:

- ⇒ In the Advanced options field, enable Log on to network.
- ⇒ If your modem handles compression (in hardware), disable the field called Enable software compression.
- ⇒ For added security, enable the field called Require encrypted password.
- ⇒ Enable the TCP/IP option in the Allowed network protocols field. Disable the other protocols unless you specifically need them.

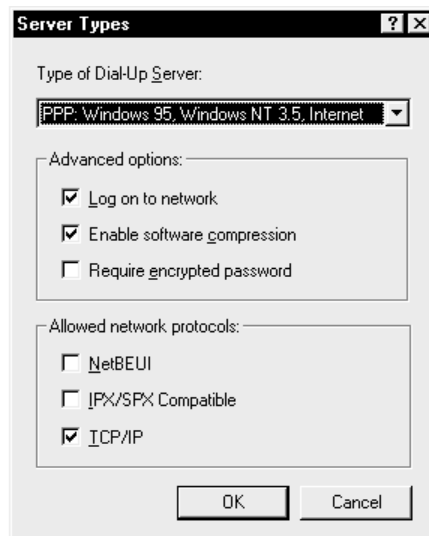


Note: If your service provider is using SLIP instead of PPP, choose SLIP in the Type of Dial-Up Server box instead of PPP.

After you've created the dial-up session and changed its properties, right-click and drag the object for the dial-up session to a blank part of your desktop to create a shortcut. Choose Create Shortcut Here from the context menu that appears. Now you can quickly establish an Internet connection from the desktop.

The Server Types dialog box

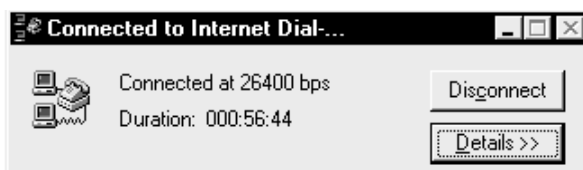
Figure 20-6.



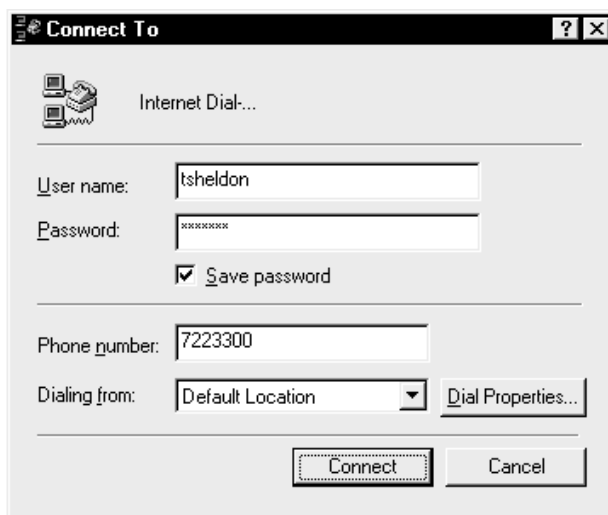
Dialing In to the Internet

To connect to your service provider, double-click the dial-up object you created in the previous section. You'll see a dialog box similar to the one shown in Figure 20-7. Type your Internet name in the User name field. You'll be entering just the first part of your Internet address. For example, my Internet address is `tsheldon@iquest.net` but I'll type only **tsheldon** in this field. Be sure to use lowercase letters.

Click the Connect button to establish the connection. Once you connect with your service provider, you'll see a small dialog box similar to the following that indicates the speed of your connection and the amount of time you have been connected.



You can click the Disconnect button to end the session, but make sure you first quit or log out of any session you might have open. Click the Details button to see the protocols in use.



Preparing to dial out to the Internet
Figure 20-7.

Now that you're connected, what do you do? You don't see any fancy menus or programs to help you along. Don't worry. You just need to run some of the Internet utilities provided with Windows 95 or by your service provider. The remainder of this chapter helps you navigate the Internet.



Tip: Your Internet service provider may have you dial in to their system using a normal (non-TCP/IP) modem connection to download public domain Internet utilities they have available.

Internet Utilities and Services

You can use the utilities and services discussed if you are connected with the Internet through your company's network or through a dial-up connection. You can also use some of these utilities if you're just working with servers on your own company's network. For example, the Telnet command discussed next lets you connect with and execute commands on a "remote" computer. Remote in this case may refer to an Internet-connected computer on the other side of the planet or another computer on the other side of your room. In the first case, you connect with the remote computer over a dial-up Internet connection or through your company's network. In the latter case, you connect via your company's in-house network.

The most important Internet utilities are listed below and described in the next few sections.

- ⇒ **Telnet** Use Telnet to connect with a server that you need to control directly or to a server that has its own menu-driven interface. You might need to Telnet your service provider to see their menus.
- ⇒ **FTP (File Transfer Protocol)** Use the FTP command to download files from other Internet computer sites.
- ⇒ **Mosaic** This is an optional utility (not included in Windows 95) that helps you navigate the Internet with a graphical user interface. Netscape Navigator (Netscape Communications Corporation) is a Mosaic clone developed by some of the same people who worked on Mosaic.

Other Internet (or TCP/IP) commands included with Windows 95 are listed in Table 20-2. Note that some of these commands are for experienced network administrators and are typically used when managing in-house networks. You use these commands by first starting the MS-DOS prompt. To get help with any command, type the command name followed by `/?`.

Internet
(TCP/IP)
Commands

Table 20-2.

Command	Description
arp	Displays and modifies the IP-to-Ethernet address translation tables. (Used by experienced TCP/IP administrators.)
ipconfig	Displays current TCP/IP network configuration values.
nbtstat	Displays information about NetBIOS over TCP/IP connections.
netstat	Displays configuration information about TCP/IP connections.
ping	Provides verification of connection between connected computers.
route	A utility for configuring routing tables.
tracert	Determines the route taken to a destination.

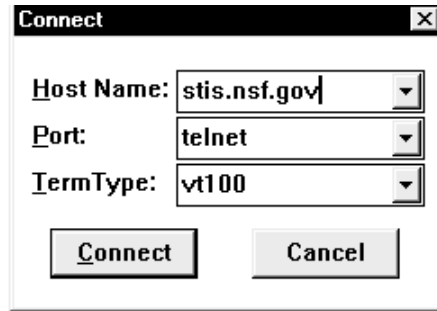
Telnet

Telnet is a terminal emulation program that you use to log on to remote Internet sites and execute commands on those systems. Think of Telnet as an intermediary between your computer and the remote computer you've connected with. When you type a command, Telnet hands it to the remote system, then displays the results from the remote computer on your computer. In most cases, you don't need to know the Telnet command set because most public Internet sites have menus that guide you as you work on the system.

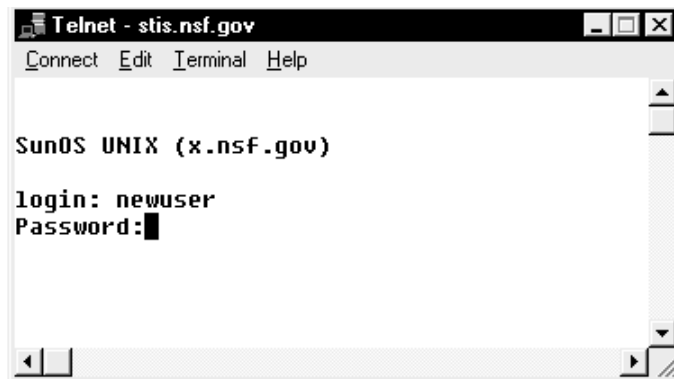
Starting Telnet

Windows 95 comes with a windows-based Telnet utility that you can start as follows:

1. Log on to your service provider by double-clicking the Dial-Up Networking object you created in the section "Configuring a Dial-Up Networking Session."
2. Start Telnet by clicking the Start button, choosing Run, and typing **telnet** in the Open field.
3. Choose Remote System from the Connect menu to display the following dialog box, then type the name of the system you want to connect with:



For example, to connect with the Science and Technology Information System (STIS) at the National Science Foundation (NSF), you would type **stis.nsf.gov** in the Host Name field as shown in the illustration. Once connected, you type a logon name and password in the Telnet window as shown here:



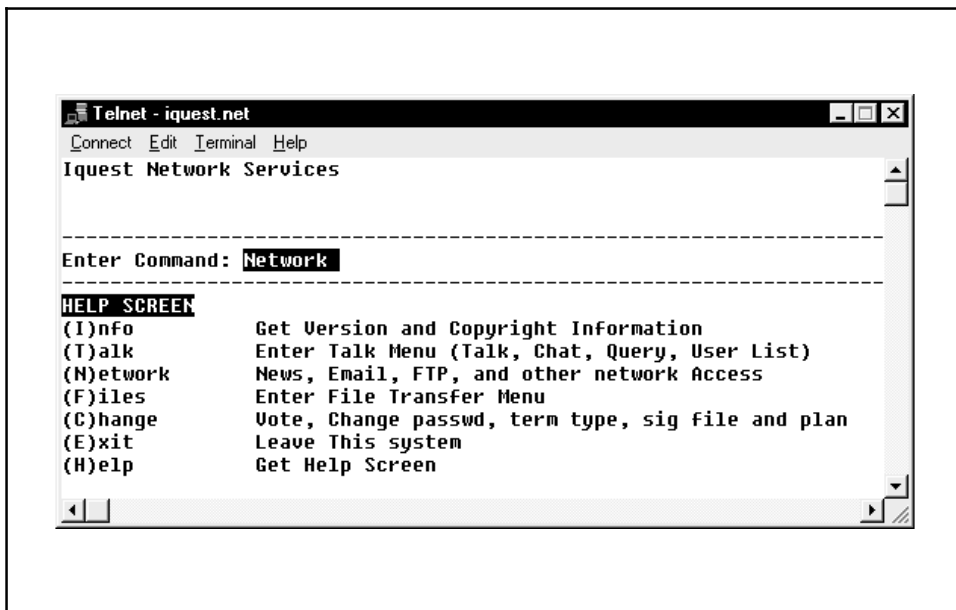
If this is the first time you're logging on, type **newuser** or **public**, then press ENTER when asked for your password.

When you log on to most public systems, you'll see a text-based menu that helps you navigate the system. For example, if you establish a Telnet connection with your Internet service provider, you'll probably see a menu system like the one shown in Figure 20-8 that helps you navigate the Internet.

Alternative Telnet Startup Method

When you open the Run dialog box to start Telnet, you can type additional commands in the Open field. For example, you can type **telnet stis.nsf.gov** to connect with that particular server.

A typical navigation screen at an Internet site
Figure 20-8.



In some cases, you need to specify a port number along with the telnet address. This port number is usually found in the address listing for Internet sites and specifies a particular service. Just type this port number after the host name in the telnet command.

FTP (File Transfer Protocol)

FTP is a text-based file transfer utility that lets you connect with and copy files from TCP/IP and Internet servers. Start the Windows 95 FTP program by choosing Run from the Start menu and typing **ftp**. A window opens with the ftp> prompt where you can type FTP commands.

You typically use FTP to access *Anonymous FTP hosts*, which are servers that contain free information. Universities, companies, and public groups set up Anonymous FTP sites to disseminate information. You'll find research papers, free software, debate logs, and other information. However, locating just the information you want can be tricky. Typically, a friend tells you about a server or you read about it in an article or book. You can also use a service called *Archie* to connect with and search Archie servers. Archie servers hold databases of information about servers from which you can obtain specific types of information. (The "Archie" section at the end of the chapter gives more information about this service.)



Note: You log onto Anonymous FTP servers by typing **anonymous** as your user name and typing your Internet account name (e-mail address) as your password unless instructed otherwise.

Starting FTP

To start FTP, connect with your Internet provider, then use the *open* command to link with FTP sites. One of the first sites you should connect with is the Microsoft FTP server where you can obtain important Windows 95 and Internet information. Type **open ftp.microsoft.com in the FTP window as shown in Figure 20-9 to establish the connection.**

Figure 20-9 shows a typical logon session. You type the *open* command which connects you with the FTP server. You then type **anonymous** as your user name and your Internet account name as your password.

After successfully logging on, you see the **ftp>** prompt where you can type FTP commands. Since the utility is a file transfer program, most of the commands are related to switching directories, listing files, and copying files to your system.

To list the files on a system, type the **dir** or **ls -l** command. The files in the current directory are displayed. Figure 20-10 shows that the **ls -l** command was typed at the **ftp>** prompt to display additional information about each

A typical FTP session—in this case, connecting with Microsoft's FTP site

Figure 20-9.

```
ftp> open ftp.microsoft.com
Connected to ftp.microsoft.com.
220 ftp.microsoft.com Windows NT FTP Server (Version 3.5).
User (ftp.microsoft.com:(none)): anonymous
331 Anonymous access allowed, send identity (e-mail name) as password.
Password:
230-!
Welcome to ftp.microsoft.com!

Please enter your "full e-mail name" as your password.
Report any problems to ftp@microsoft.com

Refer to the index.txt file for further information
230 Anonymous user logged in as anonymous (guest access).
ftp>
```

file in the listing. Note that the “dr” on the left indicates a directory and “-r” indicates a file.

You can switch to another directory by typing **cd *dirname*** where *dirname* is the name of the directory you want to switch to.



T ip: If a command stops the system or is taking too long to display information, press Ctrl-C to stop it and return to the ftp> prompt.

20

Once you find the files you want to download, use the **get** command to copy files to your system. For example, to copy the file DIRMAMP.TXT (which describes the directory structure of the Microsoft ftp host), you would type **get dirmamp.txt** at the prompt.

To download a binary file (such as a zipped archive), you need to first switch to the binary mode by typing **binary** at the ftp> prompt. Now you can type the **get** command followed by a filename to copy the file. If you want to copy multiple files, use the **mget** command, followed by the names of the files you want to copy. Separate each filename with a space. When you’re ready to download a text file, type the **ASCII** command to switch to ASCII mode.

To disconnect from an ftp site, type **disconnect**. Type **quit** to close the ftp window.

Indicates
directory

Indicates
file

```

ftp
7 x 12
230 Anonymous user logged in as anonymous (guest access).
ftp> ls -l
200 PORT command successful.
150 Opening ASCII mode data connection for /bin/ls.
dr-xr-xr-x 1 owner group 0 Mar 30 18:03 bussys
dr-xr-xr-x 1 owner group 0 Oct 7 1994 deskapps
dr-xr-xr-x 1 owner group 0 Dec 21 1994 developr
-r-xr-xr-x 1 owner group 7656 Mar 31 15:29 dirmamp.htm
-r-xr-xr-x 1 owner group 4375 Mar 31 9:32 dirmamp.txt
-r-xr-xr-x 1 owner group 712 Aug 25 1994 disclaimer.txt
-r-xr-xr-x 1 owner group 860 Oct 5 1994 index.txt
dr-xr-xr-x 1 owner group 0 Apr 5 10:16 KBHelp
-r-xr-xr-x 1 owner group 5786609 Apr 11 3:58 ls-lR.txt
-r-xr-xr-x 1 owner group 717437 Apr 11 3:58 ls-lR.Z
-r-xr-xr-x 1 owner group 558118 Apr 11 3:58 LS-LR.ZIP
-r-xr-xr-x 1 owner group 28160 Nov 28 1994 MSMBRO.DOC
-r-xr-xr-x 1 owner group 22641 Feb 8 1994 MSMBRO.TXT
dr-xr-xr-x 1 owner group 0 Oct 7 1994 peropsys
dr-xr-xr-x 1 owner group 0 Nov 2 1994 Services
-r-xr-xr-x 1 owner group 5095 Oct 20 1993 support-phones.txt
-r-xr-xr-x 1 owner group 802 Aug 25 1994 WhatHappened.txt
226 Transfer complete.
1271 bytes received in 1.21 seconds (1.05 Kbytes/sec)
ftp>

```

An FTP file
listing

Figure 20-10.



Note: The Windows 95 FTP utility may transfers files on to your personal directory or the Windows directory. Use the Find utility to locate files you have copied from remote systems if you're not sure where they are.

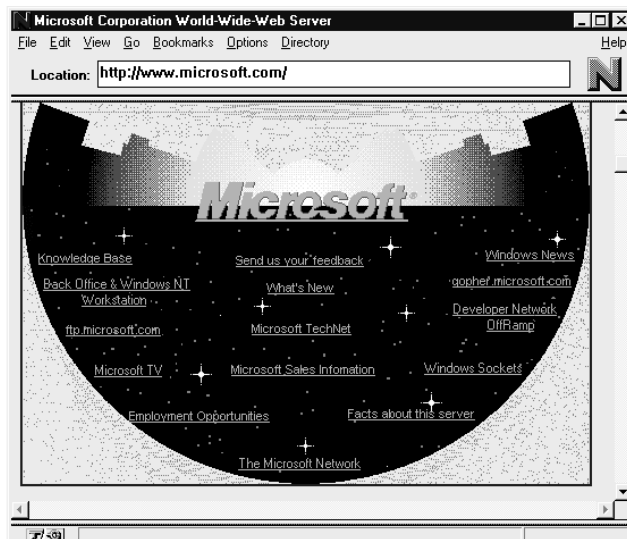
Mosaic and NetScape

To use your time on the Internet most efficiently, you need Mosaic (or its clone NetScape). It adds a graphical user interface and makes it easy to find your way through the maze of Internet sites. You simply type the name of the site you want to access in the Location field to display the home page for that site. In Figure 20-11, the home page for Microsoft's World Wide Web (W3) appears. World Wide Web provides information discovery services using hypertext links that connect one document with another. When using the service, you simply follow the links among documents. The underlined items are "hot-spots" that you can click to transfer to a specific part of the system.

Figure 20-12 shows another type of Mosaic page. In this case, I have switched to a home page that provides a search engine so I can locate Internet sites of special interest. Note the address in the Location field. From here, I can type a keyword and click the Run Query button to locate sites that have related information.

Microsoft's home page; click the underlined items to quickly switch to those areas

Figure 20-11.



In this example, **metaphysics** has been typed in the query field. In a moment, the dialog box in Figure 20-13, appears, which lists Internet sites that have information about metaphysics. Note the underlined titles. You simply click these titles to transfer to the site where that information is stored so you can view or copy documents.

To obtain Mosaic or NetScape, contact your Internet service provider or start the Windows 95 FTP utility and type **open ftp.ncsa.uiuc.edu**. At the ftp> prompt, type **cd /Web** (making sure to use upper- and lowercase letters exactly as shown), then copy the file FAQ.TXT to your system using the **get** command. Read this file for instructions on obtaining the software and installing it on your computer.

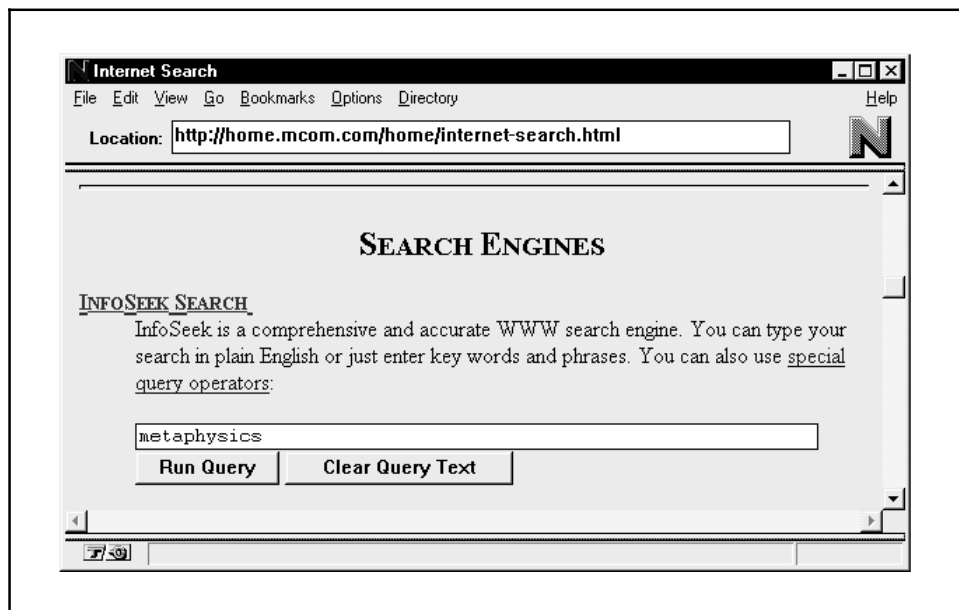
Other Internet Services

There are many other Internet services, some of which are briefly described in the following pages. Contact your Internet service provider, which can give you the information, utilities, or programs that you need to access these services. Alternatively, refer to the resources listed at the end of this chapter for more information.

Gopher

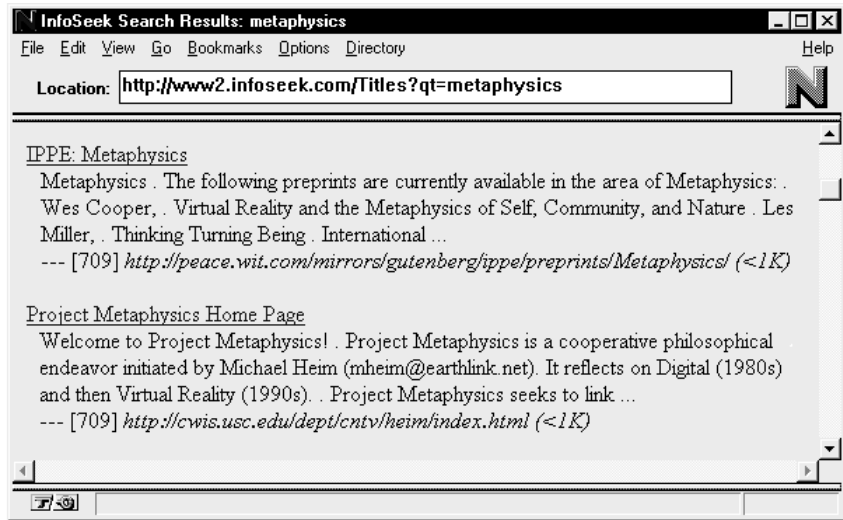
Gopher is a menu-driven document search-and-retrieval system developed by the University of Minnesota. It is officially defined as a “simple

Using a search engine to find information on the Internet
Figure 20-12.



You can click on the search results to immediately transfer to the Internet site that holds the documents

Figure 20-13.



client/server protocol that can be used to publish and search for information held on a distributed network of hosts.” Users of Gopher can view information spread out on many different hosts. Information appears in hierarchical form, or the user can request an index of matching topics. It is not certain where the name Gopher comes from, except that Minnesota is the “Gopher State” and that its people are renowned for going after things (something that the Gopher program does).



Tip: The interesting thing about Gopher is that items listed on menus might be located at completely different Internet sites. When you select an item, Gopher automatically switches you to that site.

You use a Gopher client program to access Gopher sites. The program helps you locate and keep track of sites you’ve visited and helps you navigate the Internet. Most Internet providers have versions of Gopher that run with the Windows interface.

Electronic Mail and Talk Services

Electronic mail is probably the most active service on the Internet. A number of utilities (some of which are available free on the Internet) allow you to create mail messages. The important component is the delivery mechanism,

which is the protocol the e-mail system uses to send messages. The TCP/IP e-mail protocol is *Simple Mail Transfer Protocol* (SMTP). As long as the protocol is SMTP, the user interface can have any look the developer chooses. An SMTP-based mail system on a PC lets users send and receive messages with people using a UNIX system or any user on the Internet without going through a special gateway that translates messages.

If all you want to do is exchange mail with other users, you can go through a variety of service providers and bulletin board systems that perform this exchange for you. If the provider has a gateway, you don't need to worry about using an Internet-compatible mail system. For example, if you're using CompuServe, you simply write messages using the CompuServe e-mail system, then address them to an end-user on the Internet.

Information Discovery Services

The volume of information available on the Internet is staggering. Because the Internet is a loose association of many networks and many sources of information, there has been no easy way to determine the location of information. The following services have been growing in popularity and expanding the services they provide.

Archie Archie is a service that lets you quickly locate information on anonymous FTP hosts. You access Archie through a Telnet session, e-mail query, or other methods. Archie tracks over 1,000 hosts worldwide. After reaching the site, you type **archie** to start the service, then type **help** to see a list of commands. To get more information on Archie access sites, use anonymous FTP to contact *quiche.cs.mcgill.ca*. These are just a few of the Archie sites in the U.S.

- ⇒ archie.ans.net (New York)
- ⇒ archie.rutgers.edu (New Jersey)
- ⇒ archie.sura.net (Maryland)
- ⇒ archie.unl.edu (Nebraska)

WAIS (Wide Area Information Service) WAIS is a search-and-retrieval service that provides feedback from searches so you can refine future searches. WAIS has servers that maintain indexes of Internet documents. To get more information, use anonymous FTP to contact think.com and look in the wais directory for the readme file.

Chat Services "Chat services" are real-time communication sessions that you have with one or more Internet users at the same time. During the session, you can type messages that other participants see, or just sit back

and read the messages typed by other users. Sessions take place in forums related to special topics like politics, aviation, computers, health, finance, and many others, or you can create your own session. Two services are available:

- ⇒ **talk** An interactive one-to-one communication service.
- ⇒ **IRC (Internet Relay Chat)** An interactive many-to-many communication service.

Usenet Newsgroups Usenet is a group of systems that exchange news and encompass universities, government agencies, businesses, and home users. There is no central control. Usenet is similar to a bulletin board or conferencing system in that there are ongoing topics or postings that anyone can view and respond to. Categories include computers, news, science, recreation, and of course, talk.

There has been a lot of discussion as to what Usenet actually is. According to an Internet document produced by Chip Salzenberg and revised by Gene Spafford, Usenet is not an organization because there is no central authority or “central anything.” It is not a democracy and it is also not fair—anyone can say whatever they want. But speech on the Usenet is not a right because the owners of the computers that support Usenet can block your speech if they wish. Usenet *is* a place where you can participate in lively discussions and express yourself freely.

Suggested Reading

To get more information on the Internet, refer to the following books. You can also contact the service providers discussed earlier for information, or contact Commercial Internet Exchange (CIX) Association at 617-864-0665 or the Federation of Academic and Research Networks at 617-890-5120.

- ⇒ Harley Hahn and Rick Stout. *The Internet Complete Reference*. Berkeley, CA: Osborne McGraw-Hill, 1994.
- ⇒ Tracy LaQuey. *The Internet Companion, A beginner's guide to global networking*. Reading, MA: Addison-Wesley, 1993.
- ⇒ Daniel C. Lynch and Marshall Rose. *Internet System Handbook*. Greenwich, CT: Addison-Wesley, 1993.
- ⇒ Levi Reiss and Joseph Radin. *Open Computing Guide to Mosaic*. Berkeley, CA: Osborne McGraw-Hill, 1995.

Multimedia is the catchall term for graphics, animation, sound, and video all wrapped up in an interactive package. Multimedia brings dazzle to presentations, action to games, and fun to learning. It transforms a computer from a simple desktop system with a keyboard and monitor to a space-hogging, accessorized box with speakers, microphones, headsets, joysticks, and CD-ROM drives.

One of the best examples I've seen of a multimedia PC is the Insight PCI P90 MM Ultimate from Insight Direct, Inc., of Tempe, Arizona. It is pictured in Figure 21-1. This system provides a fast Intel Pentium processor, a high-throughput PCI bus and video card, a 17-inch monitor, a Wave 32 sound card, a CD-ROM drive, headphones, speaker, a microphone, a joystick, and 35 CD titles that include encyclopedias, reference materials, games, and learning tools.

What Is Multimedia?

Multimedia gives you the ability to work with all types of information on your computer, not just text or still pictures. Multimedia is digital information, and digital information has many advantages over other types of media.

- ➡ Once information like pictures and sound are stored in digital form, they can be copied without loss of quality.

The Insight PCI P90 MM Ultimate from Insight Direct, Inc., of Tempe, Arizona

Figure 21-1.



- ⇒ Digital information can be compressed to take up less space on a storage device.
- ⇒ A lot of information can be put on a CD-ROM, and CD-ROMs take up very little shelf space.
- ⇒ Interactive computer programs that use digital media are excellent learning tools.

This chapter looks at multimedia and multimedia computer systems. If you're buying or upgrading a computer for multimedia, you need to know about multimedia add-on components, the different types of multimedia, and how to capture, store, and play back multimedia. There are basically two types of multimedia systems:

- ⇒ **Playback systems** Playback systems include double-speed (or faster) CD-ROM drives, sound cards, speakers, and relatively high-resolution video display systems. A decompression card that boosts digital movie playback is also useful.
- ⇒ **Authoring systems** Authoring systems include components such as microphones and video inputs for capturing sound and video images. They also include high-speed, high-capacity hard drives that can handle the quite large storage requirements for digital video.



Note: To avoid confusion, keep in mind that video refers to two things: the video adapter that drives the video monitor and digital video movies. Digital video movies are files that contain video captured by cameras.

In the 1980s, a basic desktop computer consisted of a CPU, keyboard, monitor, disk drives, and printers. Most of what you did on the computer was text-oriented. People spent a lot of time writing letters, doing financial calculations, and searching databases.

But with the advent of graphical user interfaces like Windows and more powerful personal computers, applications that took advantage of sound, animation, and motion video started to appear. By the late 1980s, people were composing music on computers, combining animation and sound, and creating exciting multimedia presentations that included sound and moving pictures. However, the equipment was expensive and the delivery was often slow. Windows and DOS were not designed from the base up to support multimedia, so things ran slowly.

Multimedia and Windows 95

Windows 95 changes all that. It includes support at the base level for improving multimedia performance:

- ⇒ Windows 95 is a 32-bit, multitasking, multithreaded operating system. That means it can do more things at once, play back multimedia presentations smoothly, and be more responsive to user interaction.
- ⇒ When you install Windows 95, it automatically detects and configures itself for multimedia devices.
- ⇒ Windows 95 applications supports multimedia. You can create *compound documents* that include sound, video, graphics, charts, pictures, and other elements from many different applications.
- ⇒ A new CD-ROM file system in Windows 95 improves CD-ROM performance and provides support for the Sony/Phillips CD+ format and Kodak PhotoCDs. An AutoPlay feature makes it easy to set up and play back programs on CD-ROM.
- ⇒ The video standard in Windows 95 is widely supported in the computer industry. Multimedia title developers can ship their video products knowing full well that any Windows 95 user can play them.
- ⇒ Multimedia titles developed for Windows 95 will be of higher quality because Windows 95 supports larger video windows and higher frame rates (the 32-bit architecture of Windows 95 improves data throughput).
- ⇒ Windows 95 supports the Sony VISCA interface, which means that you and your applications can control VCRs and laser disc players.
- ⇒ Game performance in Windows 95 is vastly improved with a new graphic programming interface.
- ⇒ Windows 95 supports a variety of industry-standard sound and video compression codecs (coders/decoders). *Codecs* reduce the size of multimedia files and allow developers to distribute more content in a variety of formats.

The most important advances in multimedia over the last few years have been on the video side. Video contains of incredible amounts of information, and it must be compressed before it can be transferred from a video device like a camera through a desktop PC bus to a hard drive. Imagine trying to push an overinflated balloon through a water pipe—it helps to deflate the balloon first. Advances in compression technologies for audio and video are driving the multimedia market. Publishers are producing titles with more content. Computer users, meanwhile, get a chance to work with high-quality media in professional formats.

Multimedia Systems

The basic add-on components of computers in the 1980s were disk drives, scanners, printers, and communication devices like modems. Multimedia add-ons in the 1990s include sound cards, video capture cards, CD-ROM drives, and high-speed communication links by which you can connect with information services that provide multimedia over the wire.

A computer with a set of hardware devices and software drivers that support multimedia is called a Multimedia PC, or *MPC* for short. MPC specifications are defined by the Multimedia Marketing Council. A number of leading hardware and software manufacturers are members of the Council, including Microsoft, Tandy, Fujitsu, CompuAdd, AT&T, NEC Technologies, Olivetti, Headland Technology, MediaVision, and Creative Labs.

The multimedia specifications of a few years ago are now considered outdated because the content and playback requirements of today's multimedia titles require more sophisticated equipment. High-performance processors like the Intel 80486 and Pentium chips are recommended. Here are the minimum requirements for running Windows 95 multimedia:

- ⇒ An Intel 80486 CPU (a Pentium system is recommended for digital video applications).
- ⇒ A PCI bus to provide high data throughput for disk controllers and video cards.
- ⇒ A high-capacity hard disk drive (100MB or more). Drives in the gigabyte range are necessary when capturing high-quality digital video.
- ⇒ A dual-speed, triple-speed, or quad-speed CD-ROM drive with front-panel volume control.
- ⇒ Sound cards that provide 11.025-, 22.05-, and 44.1-KHz stereo sampling rates. Multivoice and multitimbral capabilities are also required, as are internal mixing capabilities to combine input from multiple sources and present the output as stereo.
- ⇒ VGA or better video hardware that can support 640×480 at 16 colors (support for SVGA at 600×800 , 256 colors is recommended). Digital video looks best when displayed at 256 colors or more. Microsoft recommends VESA or PCI video cards for best performance.
- ⇒ An IBM-style analog or digital joystick port.
- ⇒ A MIDI port with In, Out, and Thru capabilities. Some sound cards include MIDI synthesizers, but you'll generally connect to an external MIDI synthesizer like a keyboard.



Note: MIDI is a standard for recording notes and related information that is played on electronic music devices like digital keyboards. The actual sound wave is not recorded. What is recorded is the note that was played and other information like reverb, chorus, and instrument type.

You need the components listed above to *play* multimedia titles and record and play back sounds. However, if you want to *author* multimedia titles, you need additional equipment, including video cameras, video capture boards, and possibly equipment to produce and/or capture animation. Good magazine sources for information about multimedia authoring are *New Media Magazine* (609-786-4430) and *Multimedia World* (800-825-7595, x501).

Media Types and Standards

This section defines the types of media and the standards associated with them. Multimedia information is stored in either sound, video, or MIDI file format, as listed in Table 21-1.

Audio Media

Audio is stored in two formats, waveform audio and MIDI. Most waveform media requires a lot of disk storage space, but anyone with a sound card can play it back. MIDI files require much less disk space, but can only be played back on MIDI-compatible devices. Many sound cards now include built-in MIDI synthesizers, so most multimedia systems have the ability to play back MIDI files.

Waveform Audio Waveform audio is a digital representation of sound waves. You can record and play back sounds if your computer is equipped with a sound adapter that has analog-to-digital and digital-to-analog capabilities. You can include these sound files in documents and electronic messages to any Windows user.

Multimedia
Formats and
File Types
Table 21-1.

Format	Type	Filename Extension
Audio	Audio wave file	.WAV
MIDI	MIDI music data file	.MID
Digital video	Audio/Video Interleave file	.AVI

MIDI Audio Musical Instrument Digital Interface (MIDI) files contain commands, not a digital representation of sounds. A MIDI command might instruct a synthesizer to play a note for a period of time. The synthesizer then produces the appropriate sound wave using interval sound generators.

CD Audio Windows comes with a driver that lets you play CD audio discs if your system has a CD-ROM drive. Some multimedia presentation applications provide utilities for indexing and accessing music from CD audio discs during a presentation.

Visual Media

Visual media includes animation files and video files. They are discussed here.

Animation In Windows 95, you can create images that move in windows, but you need an appropriate application to create the images. There is no standardized animation file format, but many vendors have developed both authoring and playback tools for animation. Animation can be combined with waveform or MIDI sound and can overlay video as well.

Video Video for Windows is the video standard in Windows 95. You can record video from cameras or laser discs into a computer and store it on disk in an .AVI file. Compression is required to capture high-quality video and store it efficiently.

Sound and Video Compression Standards

Multimedia information is composed of vast quantities of digital data that must be compressed before it can be delivered practically and efficiently. Windows 95 comes with an audio compression manager and an image compression manager, both of which work with one or more compression and decompression modules called codecs (coder/decoders). A number of software-based codecs are included with Windows 95. When you record or playback a sound or video file, Windows automatically uses a codec.

Many sound cards and video capture/playback cards have built-in hardware codecs. Windows 95 will use the hardware codecs first, since they are faster and put little strain on the CPU. If a hardware codec is not available, Windows 95 uses a software codecs. If it can't find a codec, you get an error message telling you that the compressed file you are trying to open can't be decompressed.

Common audio and video codecs are discussed in the next two sections.

Audio Compression Manager

The Windows 95 Audio Compression Manager (ACM) uses the following codecs to handle the compression or decompression of audio data.

- ⇒ **TrueSpeech codec** A voice-oriented codec developed by DSP Group. Use this codec for voice-only recordings that you want to compress and transfer over networks or telephone links. TrueSpeech does not perform real-time compression but does decompress in real-time.
- ⇒ **Microsoft GSM Audio codec** A real-time compression codec for low-quality monophonic voice recording. Use this codec when recording a voice message to insert in an electronic mail message to a co-worker. You can use the Sound Recorder to record voice messages.
- ⇒ **Microsoft CCITT G.711 A-Law and U-Law codec** This codec provides compatibility with telephony standards in Europe and North America. It provides 2-to-1 compression ratios.
- ⇒ **Microsoft ADPCM codec** This codec provides real-time compression and a non-real-time compression option for multimedia authors. Audio files generated with the non-real-time compressor sound better.
- ⇒ **IMA ADPCM codec** This codec was defined by the Interactive Multimedia Association for use on different multimedia platforms. It offers real-time compression and is similar to the Microsoft ADPCM codec.
- ⇒ **Microsoft PCM converter** This converter is included so that 8-bit sound cards can play 16-bit audio samples. You can also use this codec to play a sample at 1 megahertz rate on a card that supports another rate.

Image Compression Manager

Compression is essential for digital video. Unless files are compressed, standard PC data transfer channels can't push enough data through to keep up with a video data stream. The Windows 95 Image Compression Manager (ICM) uses the following codecs to compress and decompress video data:

- ⇒ **Cinepak** A common codec used by multimedia authors to compress low-quality video (320 × 240, 15 frames per second). Cinepak is commonly used by multimedia authors to create CD-ROM playback information. It requires very long compression times (12 to 16 hours for ten minutes of video).
- ⇒ **Indeo** An Intel codec that provides fast compression and decompression when used with Intel hardware. Like Cinepak, it is used for DC-ROM authoring.

- ⇒ **Microsoft Run-Length Encoding** This codec is good for compressing animation that includes bitmap images. It does not handle changes between frames well, such as you see in live video.
- ⇒ **Microsoft Video 1** A relatively fast compression codec for moderate-quality video.

Following are some more standards for compressing still images and motion video. You are likely to come across these standards when you install video-related applications or video capture cards.

- ⇒ **JPEG (Joint Photography Experts Group)** A still-image compression standard that discards colors that the eye can't normally detect.
- ⇒ **MPEG (Motion Pictures Experts Group)** A standard for compressing full-motion video and CD-quality audio. MPEG is available in several versions, the latest of which supports HDTV (High-Definition TV) data rates.
- ⇒ **Px64** A group of codecs for use in video-conferencing applications. The quality of video varies to support the different throughput rates of computer networks and telecommunication facilities.

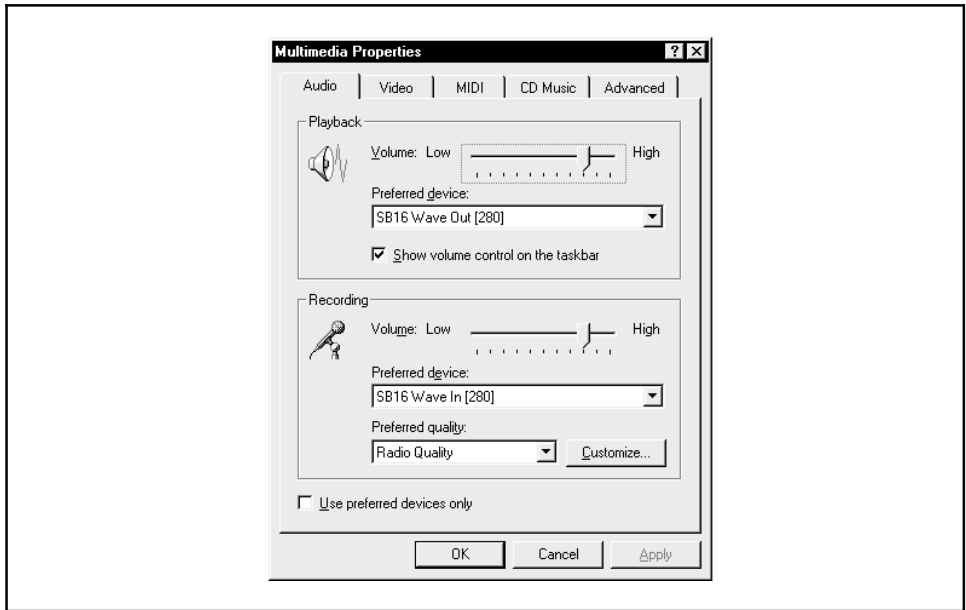
The important industry-standard codec that Windows 95 supports is MPEG (Motion Pictures Experts Group). Microsoft and the Open Computer MPEG Consortium worked together to define this industry-standard MPEG. An industry-wide standard, they reasoned, would encourage companies to develop MPEG decompression boards and chip sets that play multimedia faster on CD-ROMs. Vendors that incorporate MPEG-compressed video in their titles can rest assured that users with compatible MPEG devices will be able to decompress and play back titles. Not only that, but they will be able to play back the titles at much higher performance levels.

Introducing the Windows 95 Multimedia Tools

Windows 95 comes with several accessories for working with sound and video. A utility in the Control Panel lets you set multimedia features and options. These accessories are outlined below and discussed in detail in Chapter 22.

To change multimedia settings for your computer, open the Control Panel and double-click the Multimedia utility. You'll see the dialog box shown in Figure 21-2. Note the Audio, Video, MIDI, CD Music, and Advanced tabs. Refer to "Changing Multimedia Settings on Your Computer" in Chapter 22 for information on changing these options.

Open the Multimedia Properties window in the Control Panel to change Windows 95 multimedia settings
Figure 21-2.



Note: To change the sounds for system events, open the Sounds utility in the Control Panel. Refer to “Customizing Event Sounds” in Chapter 5.

To start a Windows 95 multimedia accessory, open the Start menu, choose Programs, then Accessories, then Multimedia. The following menu appears:

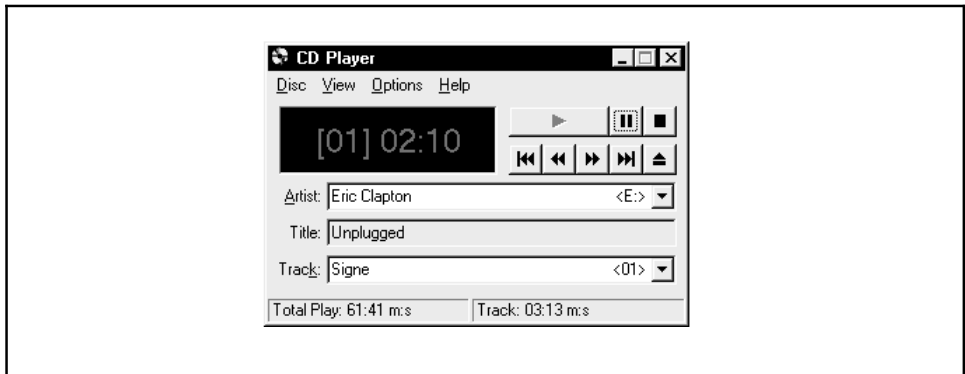


The CD Player window, pictured in Figure 21-3, is a control panel for playing music CDs on the CD-ROM drive in a computer. Use it just like a normal CD player. You can also type in the title and track names for CDs. CD Player remembers the titles and reloads them whenever you put the CD back in the player. Then you can select specific tracks to play based on the track names, rather than a number.

Use the Volume Control utility shown in Figure 21-4 to control how loud or soft the CD plays. This utility controls the sound on speakers or headsets

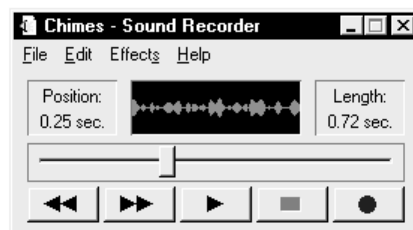
The CD Player lets you catalog and play music CDs on your computer's CD-ROM drive

Figure 21-3.

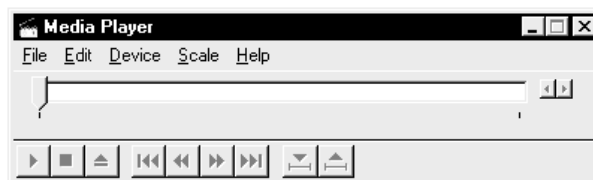


plugged into your sound card (it doesn't control the volume of speakers or headsets plugged directly into your CD-ROM front-panel jack).

The Sound Recorder, pictured below, lets you play back pre-recorded wave sounds or record your own with a microphone. It has a few simple editing controls and special effect features. Use it to create voice recordings that you can insert as objects in documents and e-mail.



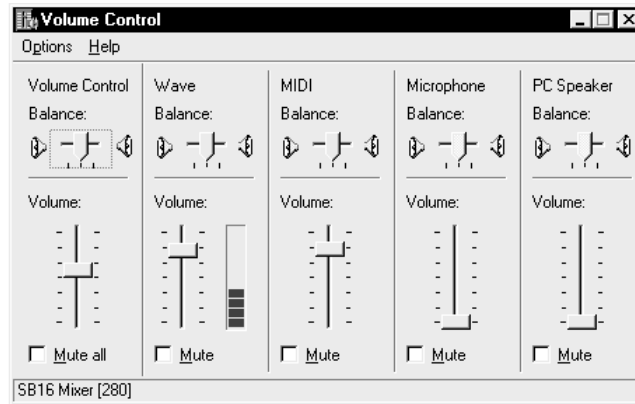
Finally, the Media Player, which is pictured below, lets you play back different kinds of multimedia, including sound, video, and CD music.



You'll see the Media Player if you double-click sound and video objects in compound (OLE) documents.

The Volume Control lets you control five different volume and balance settings

Figure 21-4.



More About CD-ROM Drives

The CD-ROM drive has become a vital part of personal computer systems. Large amounts of information can be stored and distributed on compact discs, including entire videos. It's easy to search whole encyclopedias on a CD. You can even locate sound, animation, and movies on a compact disc.

Windows 95 takes full advantage of CD-ROM drives:

- It supports the new Sony/Phillips CD+ format that allows audio and data to be on the same CD. Titles that carry the CD+ brand name can be played on audio CD players when you want to listen to music and on computer CD-ROM drives when you want to get digital information such as song lyrics, biographies, and even music videos.
- It has a new CD-ROM file system (CDFS) that supports a variety of CD-ROM drive speeds, including triple-speed and quad-speed.
- It supports the Kodak PhotoCD format and the emerging video CD format.
- It includes an AutoPlay feature for CD-ROMs. When you put a CD-ROM in the drive for the first time, the AutoPlay feature sets up the program on the disk for you.

These days, most personal computers come with CD-ROM drives. They are considered as much a part of the computer as the monitor and keyboard. Here are some things you should know if you're buying a CD-ROM drive:

- ⇒ **Data transfer rates** This is the rate at which data can be read from the drive. Single-speed drives are rated at 150K per second, which is inadequate for Windows 95. Look for double-speed (300K per second) or faster drives. These per-second speeds, by the way, describe how fast the disc spins.
- ⇒ **Average Access Time** This is how fast the drive can move the read heads from track to track. Typical access times are from 0.3 to 0.5 seconds (the lower the number, the better).
- ⇒ **Interface** SCSI, IDE, or proprietary.

Avoid buying a CD-ROM drive that has its own interface card. Instead, buy a drive that you can attach to an existing interface in your computer, such as a sound card, an IDE disk controller, or a SCSI disk controller.



Tip: Buy a CD-ROM drive with a retractable tray instead of one that requires you to place the CD inside a separate carrier. The carriers are really a nuisance (though they do protect your disks if you switch disks a lot).

More about Multimedia Audio

Recording and playing back sound was the first well-known multimedia application for personal computers. By adding a sound card, you could record a voice message, store it as a file on disk, and transfer it to another computer, where it could be played back. You could also record music and sound for computer-generated presentations.

There are two types of audio for multimedia:

- ⇒ *Wave audio* is when actual sound waves are recorded and converted to digital data.
- ⇒ *MIDI audio* is not really sound at all, but the recording of keystrokes or other actions that direct synthesizers and other MIDI-compatible electronic music devices to generate sounds. A MIDI file is the electronic equivalent of the scroll in a player piano.

Wave Audio

Sound boards convert analog sound waves to digital information by sampling, or reading, the sound thousands of times per second. Digitized sounds are stored in wave files with the .WAV extension. When the sound is

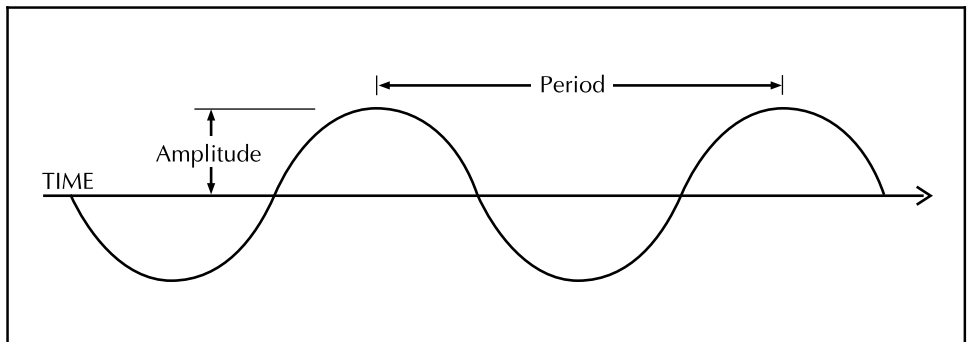
recorded, an analog-to-digital converter (ADC) converts the analog sounds to digital data. When the sound is played back, a digital-to-analog converter (DAC) converts the digital data in the wave file to analog waves.

Sounds consist of vibrations that form a wave with a certain amplitude and period, as shown in Figure 21-5. The *amplitude* measures the height of the wave, or the loudness of the sound. The *period* is the distance between two waves in the sound. Finally, *frequency* measures the number of periods per second, expressed as hertz (Hz). One hundred periods per second is 100Hz, for example. The range of human hearing is 20Hz to 20,000Hz, and this is the range that high-fidelity sound equipment strives to reproduce.

To record sound and store it on a digital device like your computer, the sound is *sampled* at periodic time intervals. The sound wave shown in Figure 21-6 is sampled 16 times. If you assume that this wave lasts one second, then the sampling rate is 16 hertz.

Sampling at such a low rate is impractical. Even sampling at 100Hz or 1000Hz produces sounds that can't be recognized when they are played back. That's because the digital representation of the waves is not smooth. Filtering techniques can "smooth" a wave, but the best way to make a quality digital recording is to increase the sampling rate. But this increases the amount of collected data which requires more storage space.

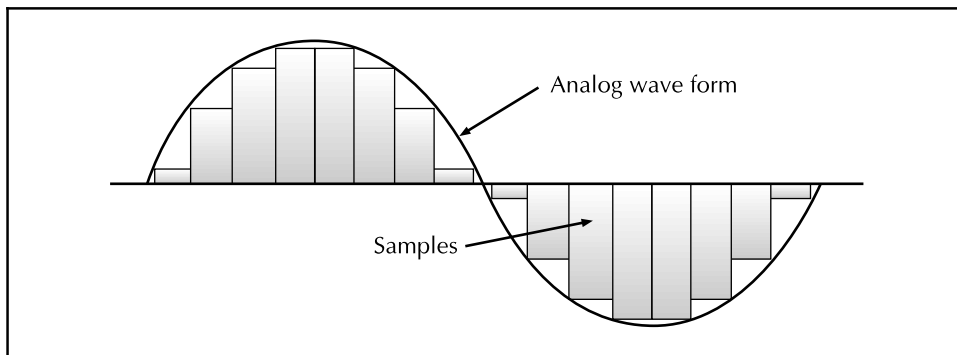
The multimedia specification requires three sampling rates: 11.025KHz, 22.05KHz, and 44.1KHz. Which rate you use depends on the type of sound you're recording. The 11.025kHz rate is adequate for voice, but high-fidelity recording requires rates of 44.1kHz. However, increasing the sampling rates increases the size of the file and the amount of disk space needed to store it. A formula for calculating disk space is presented in a moment, but there's one other variable you need to know about before you can work with the formula, and that is the number of bits used to store the sampled information.



Measuring a
sound wave
Figure 21-5.

A wave
sampled at 16
hertz

Figure 21-6.

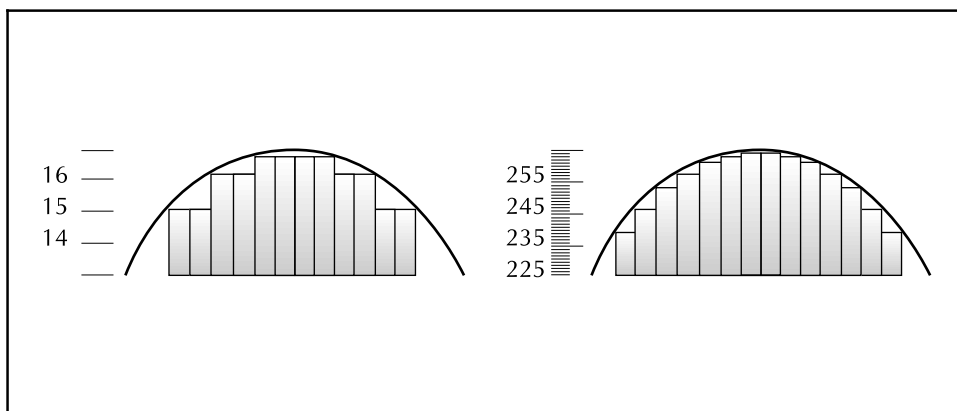


Each sample includes information about a small time segment of the sound. The number of bits used to record each sample determines how precise the sample is in terms of its vertical height, but the more bits used to store each sample, the larger the resulting file. As pictured in Figure 21-7, a 4-bit sample provides a vertical sampling of the wave that is divided into 16 levels of amplitude, and an 8-bit sample provides 256 levels. For high-fidelity recording, a 16-bit sampling rate is required, and it produces 65,536 different amplitude sampling levels.

The previous discussion covered a “smooth” sound wave, but actual sound waves are never smooth—they are a mix of many different and varying frequencies that, together, produce the timbre of the sound. *Timbre* describes the unique sound of an instrument. For example, vibrating strings and a resonating sound box produce the sound on a violin (some claim the unique sound of a Stradivarius is produced by jewels ground into the varnish). A violin produces very complex sound waves, as shown in Figure 21-8.

The number of
bits used to
store a sample
determines the
sample quality

Figure 21-7.



Now you see the importance of increasing the sampling rate and bit rate when you record sounds. Not only do you need to know the amplitude of each sample, you also need to know everything the wave is doing within the time frame of the sample. Capturing the very tiny frequencies within the larger frequencies is important to producing a quality digital sound—but the trade-off, of course, is the amount of disk space needed to store recorded sound. The higher the sampling and bit rate, the more disk space you need. Fortunately, if you're just recording voice, you don't need to record with high sampling and bit rates.

Here's a formula to figure out the disk space requirements for digital recording:

$$\frac{\text{sampling rate} * \text{bits}}{8} = \text{bytes per sec}$$

Table 21-2 shows the amount of disk space required for one minute of sound for each sampling rate at 8 bits. The first line in the table is adequate for low-quality voice recordings and the last line in the table is necessary for Compact Disc Digital Audio.

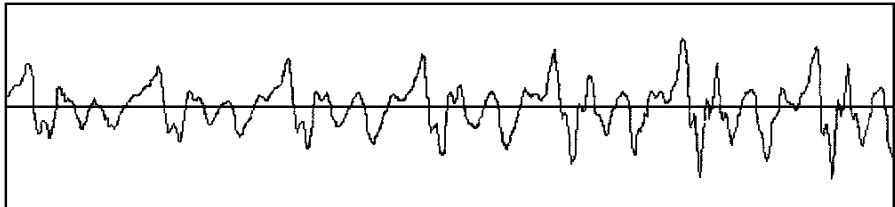


Note: If you record in stereo, double the disk requirements.

Keep in mind that sampling at high rates is not necessary if the sound is being recorded and played back on inferior equipment. For example, a pocket microphone that's rated for recording voices would be a poor match

Actual sound waves are complex and must be sampled thousands of times per second for accurate digital reproduction

Figure 21-8.



Storage Requirements for Digital Audio	Bits	Sampling Rate	Bytes/Storage Required
	8 bits	11.025KHz	0.66MB/minute
	8 bits	22.05KHz	1.32MB/minute
	8 bits	44.1KHz	2.646MB/minute
Table 21-2.	16 bits	44.1KHz	5.292MB/minute

when recording at 44KHz. Even if you do manage to record an accurate, high-quality sound, the playback system must be of equally high quality. The speaker in your computer probably can't play high-quality sound.

MIDI (Musical Instrument Digital Interface)

The MIDI specification was developed in the early 1980s. It defines how electronic musical instruments can interface and communicate with one another. The interface defines the physical connection (cables and connectors) among instruments, and the protocols for communications. MIDI also defines the type of information transmitted over the cables and how that information is stored in memory or on disk.

MIDI information consists of messages, rather than sound waves. A message might instruct a synthesizer to play (turn on) middle C, then another message might turn it off. These on/off messages and other instructions are far more efficient for storing musical information than are digital waveforms. However, to record MIDI messages, you need a device like a keyboard synthesizer that understands MIDI messages and can generate the appropriate sounds when it receives a MIDI message.

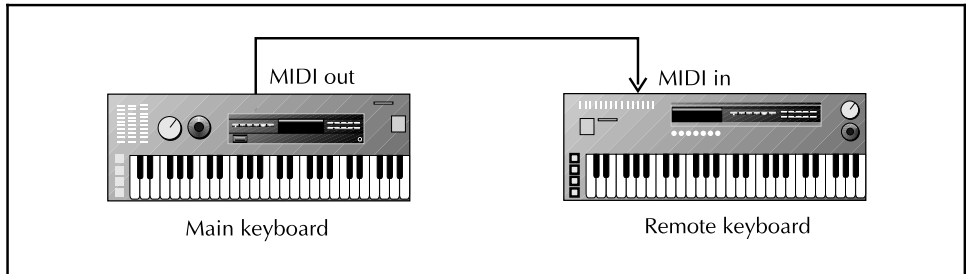
MIDI Beginnings

MIDI started out as a way for musicians to interconnect keyboard synthesizers. Musicians with several keyboards at their disposal had only two hands to play them with. But with MIDI, a musician could connect one keyboard to another and "remotely play" the attached keyboard, as shown in Figure 21-9. A key played on the main keyboard also plays on the remote unit. Doubling up sounds this way helps to produce "fatter" notes. And richer sounds too, since notes played on the remote keyboard could be moved an octave up or down, or assigned a different instrument sound. A musician could combine a piano sound on the main keyboard with a string sound on the remote keyboard, for example.

Musicians became fascinated with MIDI technology. They wanted to connect more keyboards and get bigger and better sounds. A musician could

With MIDI, a main keyboard can control another keyboard

Figure 21-9.



control a drum machine from the master keyboard, and at the same time play a chorus on another keyboard synthesizer. However, because a musician only has two hands, it doesn't make sense to buy a new keyboard just to get more sound. That's where *sound modules* come in.

With sound modules, a musician can control extra voices from a central keyboard, not a remote keyboard, as shown in Figure 21-10. Since the remote keyboard is eliminated, sound modules cost less. Most computer sound cards today have built-in MIDI sound modules. The figure shows how the three MIDI connectors (In, Out, Thru) are implemented in the cabling scheme. The Thru connection on the middle device extends the MIDI connection from the master keyboard to the last device in the chain, but the middle device does not alter the messages destined for the last device in the chain.

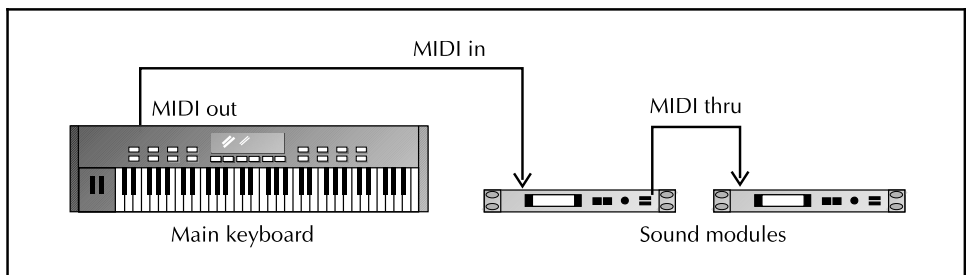
A typical synthesizer has hundreds of sounds, from pianos to horns to strings to drums. Each sound has a number and is listed in the synthesizer's manual. You select the sound you want to play by pressing a number on the device or selecting it in a computer control program, as discussed next.

MIDI Sequencing

When you add a computer to a MIDI setup, you gain even more control over your MIDI music system. The computer can help you create and store music by recording what you play on MIDI devices and playing back the recordings at any time.

Keyboard and sound modules connected with MIDI

Figure 21-10.



Recording what you play on a MIDI device is called *sequencing*. A sequence holds a series of MIDI “events,” such as keystrokes, instruments changes, and volume settings. Once you’ve recorded a score, you can change it in a number of ways. For example, you can change the note sequence for a piano to an electric keyboard, move notes up or down the scale, or change their position in time. You can even correct keystroke errors.

External synthesizers and sound modules connect to MIDI *channels* in order to receive information from the computer. You tune a synthesizer to a MIDI channel in the same way you tune a television or radio to a channel. One channel might broadcast information to play woodwinds and another to play strings. In this way, one cable transmits all the MIDI information, and each synthesizer plays only the notes of the channel it is tuned to. *System events* are instructions that change sounds or make other settings on MIDI devices.

MIDI sequencing packages provide a powerful way to create music. They mimic multitrack recording systems in which each instrument is recorded in a separate track. You can view the time line of the tracks by scrolling from left to right. As you scroll, you can view each note and change its position and duration. Typically, you record each track separately and play them back through one of the MIDI channels.

MIDI Device Features

The MPC specification requires multimedia computers to have a MIDI port for connecting external MIDI devices such as MIDI keyboard synthesizers and MIDI sound modules. Popular sound cards include a MIDI interface and connector. In some cases, you need to buy a special cable to interconnect the external MIDI device with your sound card. Many sound cards now include built-in MIDI synthesizers. If this is the case, you don’t need to connect with external sound-generating MIDI devices, although you can do that to increase the number of sounds you can play at once.

A MIDI device or connector should have an In, Out, and Thru connector; but not all devices do. For example, a device that sends data but never receives it might only have an Out port. The Thru port passes MIDI information from one machine to the next and provides a way to daisy-chain MIDI devices.

A keyboard synthesizer generates sounds by using a technique called *FM (frequency modulation) synthesis* or by playing back “samples” of actual musical instrument sounds. In FM synthesis, the sound of a piano is created with electronic oscillators. In contrast, sampling keyboards are not really synthesizers at all. Instead, they play back the pre-recorded and digitized sound of a Steinway or other real-world instrument. Early sound cards and

synthesizers used FM synthesis exclusively, but most devices now employ the sampling method because the sounds are more lifelike.

About Base-Level and Extended Synthesizers

The Multimedia specification classifies synthesizers and sound boards into two levels: base-level synthesizers and extended synthesizers. This classification is made according to the number of instruments and notes the synthesizer can play, not on the quality or cost of the synthesizer. Table 21-3 shows the minimum capabilities of base-level and extended synthesizers.

Polyphony is the number of notes a synthesizer can play simultaneously. The polyphony in Table 21-3 applies to each group of instruments, both melodic and percussive. For example, an extended-level synthesizer can play 16 notes distributed among nine melodic instrument sounds and 16 notes distributed among eight percussive sounds. MIDI channels are normally arranged as follows, depending on the level of the synthesizer:

- ⇒ **Base-level synthesizers** MIDI channels 13 through 16 are used for melodic instruments, with channel 16 reserved for key-based percussion instruments.
- ⇒ **Extended-level synthesizers** MIDI channels 1 through 10 are used for melodic instruments, with channel 10 reserved for key-based percussion instruments.

Notice the differences between melodic and percussive instruments. You can assign melodic instruments to different MIDI channels, and then assign a specific sound patch to that channel. A sound patch is a specific sound, like a violin or trumpet.

Percussive instruments are all on a single MIDI channel and are *key-based*, which means that each key or note on the keyboard plays a different percussion instrument. For example, the middle C key is a high bongo, the D key in the same octave is a mute high conga, the E key is a low conga, and so on.

Synthesizer	Melodic Instruments		Percussion Instruments	
	Number	Polyphony	Number	Polyphony
Base-Level	3 instruments	6 notes	3 instruments	3 notes
Extended	9 instruments	16 notes	8 instruments	16 notes

Types of MIDI
Synthesizers
Table 21-3.

General MIDI Specification

The MIDI Manufacturers Association (MMA) has a General MIDI specification that defines what percussive instrument each key on the keyboard plays, and what instrument is assigned to each patch number. As mentioned, a patch is a specific sound such as a violin, trumpet, guitar, or piano.

The General MIDI specification is important because it helps standardize the way MIDI files sound on different systems. It defines patch numbers and assigns specific sounds to each number. Thanks to the General MIDI specification, multimedia authors and MIDI musicians can create MIDI scores and rest assured that the right instruments will be played back when the scores are played on other systems. General MIDI ensures that a honky-tonk piano (general MIDI patch number 3), for example, is played back as a honky-tonk piano on another system. If a MIDI keyboard that doesn't follow the General MIDI specification is used—for example, a keyboard to which a violin sound has been assigned to patch 3—the honky-tonk piano track (channel) will play a violin sound.

More about Multimedia Video

This section is about recording video and playing it back. It discusses how Windows 95 supports video. It explains what you need to know to capture video on your computer and play it back either on your computer or a computer that doesn't necessarily have the same data throughput. For the purposes of this discussion, I group multimedia systems into two categories:

- ⇒ **Playback-only systems** These are computers with relatively inexpensive add-ons designed to play back multimedia titles that include video. The add-ons might be nothing more than a board for hardware decompression to speed up playback and a video display system that can handle 256 or more colors.
- ⇒ **Authoring systems** These are elaborate computers with high-end processors; a PCI bus; a video capture board; and fast, high-capacity hard drives. Authoring systems are used to produce multimedia titles, presentations, training material, corporate videos, commercials, or other video and sound projects.

Playback Systems

If you want to play back pre-recorded video files or multimedia presentations from a CD-ROM but not create them yourself, your system need not be very complicated. In fact, many of the multimedia titles on the market in 1995

contain low-quality content to ensure that they will play back on computers with single-speed CD-ROM drives.

In most cases, you don't need special software or hardware to play back video clips in Windows 95. However, to produce high-quality video, many producers of CD-ROM titles are encoding their works with MPEG. You get high-quality video with MPEG, but decompressing MPEG files takes a lot of CPU time. To overcome this, install one of the new MPEG decoding boards in your computer. Many video cards now include MPEG codecs. If you're shopping for these boards, look for one that conforms to the standards outlined by the Open PC MPEG Consortium.

DCI (Display Control Interface) is another new option you'll find on video cards. DCI is a display driver created by Microsoft and Intel to speed up games and digital video playback. With DCI, video cards can include advanced features such as:

- ⇒ Video scaling so you can stretch video clips to a larger size with virtually no assistance from the CPU
- ⇒ Color space-conversion that works with a compression algorithm to give you bigger and more colorful video
- ⇒ Double-buffering, which provides a way to load and prepare the next frame of video in the background to produce smoother animation and video playback
- ⇒ Other techniques that improve game performance

Authoring Systems

If you intend to record video from analog sources like camcorders and other devices, you need a high-performance system. You need it to keep up with the large data stream produced by analog video. The system requirements for capturing, compressing, digitizing, and recording video to disk are much greater than the requirements for playing back video. Here is a rundown of the numbers:

- ⇒ Assume you want to record full-frame video, which is 640×480 , or 307,200 pixels per frame.
- ⇒ To avoid "jerky" video, you record at 30 frames per second. This requires a data throughput of 9,216,000 pixels per second.
- ⇒ For the highest color quality, you want to use 24 bits per pixel, so you end up with a data throughput requirement of 27.6MB per second ($9,216,000 \text{ pixels} \times 24 \text{ bits}$).
- ⇒ Adding sound increases the throughput by about 200K per second.

Currently, no desktop computer hardware can transfer data at these rates. The only way to get the video into your computer is to compress it first and/or apply various techniques to reduce the resolution. The more compression you apply, the more distortion you add to digital video. Any discussion of video must include a discussion of compression and decompression techniques. And you also have to consider storage requirements. Even after compression, you need about 1.5MB to 2MB of storage for every minute of video, depending on the quality and compression ratio.

How Windows 95 Supports Multimedia Video

Video for Windows, a video format developed by Microsoft, is included in Windows 95. Multimedia title developers can use it as a standard so that all computers running Windows 95 can play their video without a hitch. With Windows 95, you'll see larger video windows, higher frame rates, and less compression-induced distortion.

Windows 95 brings professional-quality digital video to the desktop. Its 32-bit architecture does not restrict data throughput requirements for video, as DOS and Windows 3.1 did. Video can look smooth, even at high-resolutions and in large windows, depending on the equipment. According to Microsoft, "Windows 95 is the cheapest multimedia upgrade available" for video production and playback.

The most common way to package digital video is on CD-ROM discs. Developers are excited about the 32-bit capabilities of Windows 95, because it means they can include high-quality video on CD-ROM. Previous versions of Windows supported 16-bit, not 32-bit, drivers and applications. The 32-bit drivers and applications were incapable of keeping up with the video data throughput requirements for fast data transfers, decompression, and video displays.

Windows 95 supports a number of video standards, including the .AVI (Audio-Video Interleaved) file format, a Microsoft standard for compressing and storing digital video. Windows 95 also supports a wide variety of video codecs. When you play back a video, Windows 95 automatically uses the right codec, assuming it is installed in your system.

Windows 95 also supports the VISCA (Video System Control Architecture) standard, which was developed by Sony and Phillips. This standard is to video equipment what MIDI is to electronic music equipment. It lets you connect video devices to your computer that can be controlled from software programs.

Compression and codecs

Deflating information is what compression is all about. It just so happens that video contains the equivalent of a lot of hot air from frame-to-frame. For example, imagine an interview in which the background includes a lot of green grass and blue sky. You don't need to store the blue and green information for every frame. Instead, a compressor can remember how many contiguous video frames show the color green in the same place. Instead of storing the same green background for every frame, which would take up lots of disk space, the compressor says, "Use the same green background for the next fifty frames."

Video for Windows supports the .AVI file format, which itself supports a number of different hardware- and software-based codecs. You employ a particular codec when recording and digitizing video. When you play back a compressed file, Windows 95 attempts to use a hardware-based codec first, if one is available. If one is not available, it uses a software codec. The information about which codec to use is encoded in the compressed file, so all you have to worry about is making sure that the proper codecs are available. If one is not available, you see error messages telling you so.



Note: The advantage of software-based codecs is that they simplify the playing back of compressed movies. If you don't have a codec, you can obtain it from the distributor and load it into Windows 95. The advantage of hardware codecs is that they provide better performance.

When you compress movies so you can distribute them, make sure you use a popular codec or one that you can distribute along with the movie. If you use a proprietary hardware-based codec, only people with similar hardware will be able to play back the movie. Some codecs are both hardware- and software-based. If this is the case, use the hardware version when recording your movie, and include the software version when you distribute it.

As an example, the specification of the Intel Indeo 3.0 codec is outlined below:

- ⇒ Video playback is two times faster than previous versions of Indeo.
- ⇒ The compression algorithm lets you control the quality or data rate of the captured video.
- ⇒ The codec supports the European PAL video standard.
- ⇒ Supports 160×120 at 30 fps (frames per second), 320×240 at 15 fps, and 240×180 at 15 fps.

- ⇒ Frames are dropped when capturing 320×240 or 240×180 images at frame rates greater than 15 fps. At this size, the occasional dropped frame does not always detract from the image quality of the video (i.e., it's already low quality compared to the original).
- ⇒ Requires disk drives with data transfer rates above 1.4MB per second for capture; otherwise, frames are dropped.

Video Capture Cards

More at-home users and professionals are getting interested in “desktop video production systems.” These systems let you create professional-quality movies, commercials, video training films, and multimedia presentations on a desktop computer. The idea is to capture video and store it as clips on a hard disk. You then use a video editing program like Adobe Premier to cut and paste together video productions. In Adobe Premiere, video clips appear as icons. You place the first video clip on a time line, then place the second clip after it. You can specify transitions like fade-throughs, zooms, or dissolves between clips. You can even include titles that move and rotate in space.

Desktop video systems require video capture boards; high-throughput data buses (preferably PCI); and fast, high-capacity hard drives. Two video capture boards are discussed. The first, the Intel Smart Video Recorder, is for medium-quality video production. The second, the Truevision Targa 2000, is for professional-quality production.

The Intel Smart Video Recorder

The Intel Smart Video Recorder is an excellent video capture system for presentations, home productions, and multimedia titles that do not require high-resolution video. The quality of video that this board produces matches the quality of video you can distribute on most CD-ROMs. The board has a suggested list price of \$699. Here are the specifications:

- ⇒ Implements Indeo video compression technology. The board captures and compresses in one step. It supports up to 16.7 million colors with capture resolutions of 160×120 at 30 fps (frames per second), 240×180 at 15 fps, or 320×240 at 15 fps. The board also captures still images at 640×480 . The board has one RCA (composite) input jack and one S-Video input jack. It has no outputs, so you can't record video back to a VCR. Compressed video is saved to .AVI files, which can be played back on any system that supports Microsoft Video for Windows and has an Indeo codec. If you want to capture audio, you'll need an MPC-compliant sound board. The audio output from the camera or VCR is

plugged into the sound board audio line-in. During capture, the audio is integrated with the video.

The Truevision Targa 2000

The Truevision Targa 2000 is a professional-quality video capture board. It captures full-motion, full-size video. This board is truly for the professional user and at this writing is only available for EISA bus systems, although a higher-performance model is in the works for PCI bus systems. The suggested list price is around \$5,000.

- ⇒ The Targa 2000 can record full-screen, full-motion video to disk at 60 fields per second, 640×480 NTSC resolution and can compress data at a rate of 5MB per second. JPEG compression is used. The board includes composite or S-Video input and output jacks and cables with appropriate jacks, plus VGA support. You can also record sound without the need for an additional sound board.

In my own experience with the Truevision Targa 2000, I had trouble finding a high-capacity hard drive that could keep up with the data throughput of the capture board. The Pentium-based system included a capable PCI-based SCSI-II adapter to connect drives, but frames were lost during every capture. Finally, I returned the drives to Seagate for reconfiguration. They had to set the write cache on and make some other settings before I could capture at a respectable rate. I ran these tests under Windows 3.1, which does not support the new 32-bit features of Windows 95, and that's another problem. At this point, I'm waiting for Truevision's Windows 95 drivers.

Windows 95 comes with the multimedia accessories for editing and listening to sound, playing movies, and playing music CDs. You access these accessories by opening the Start menu, choosing Programs, then Accessories, then Multimedia. The following menu appears:



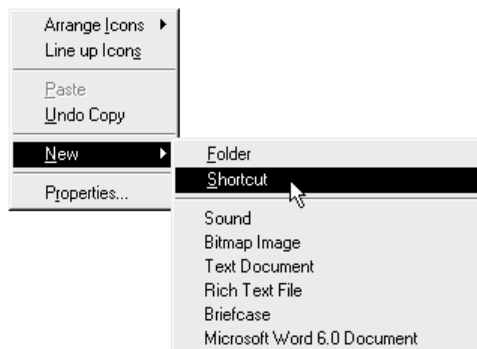
The accessories shown on this menu are described briefly here and discussed in great detail throughout the rest of the chapter:

- ⇒ **CD Player** Lets you play music CDs and create play lists.
- ⇒ **Media Player** A “universal” player for multimedia files.
- ⇒ **Sound Recorder** A simple utility for recording and playing digitized sounds.
- ⇒ **Volume Control** An accessory for controlling the volume of multimedia output devices.



Note: At the end of this chapter, you’ll also find a discussion of the Multimedia utility found in the Control Panel that you use to change multimedia settings or add new devices. For information on assigning sounds to system events, refer to “Customizing Event Sounds” in Chapter 5.

Remember, you can make any accessory easier to start by creating a shortcut for it on the desktop. To create a shortcut, right-click the desktop, then choose New and Shortcut, as shown here:



When the Create Shortcut dialog box appears, type the name of the accessory you want to create a shortcut for. Here’s a list of accessory names you can type in the dialog box.

Accessory	Type in
CD Player	CDPLAYER.EXE
Media Player	MPLAYER.EXE
Sound Recorder	SNDRREC32.EXE
Volume Control	SNDRVOL32.EXE

CD Player

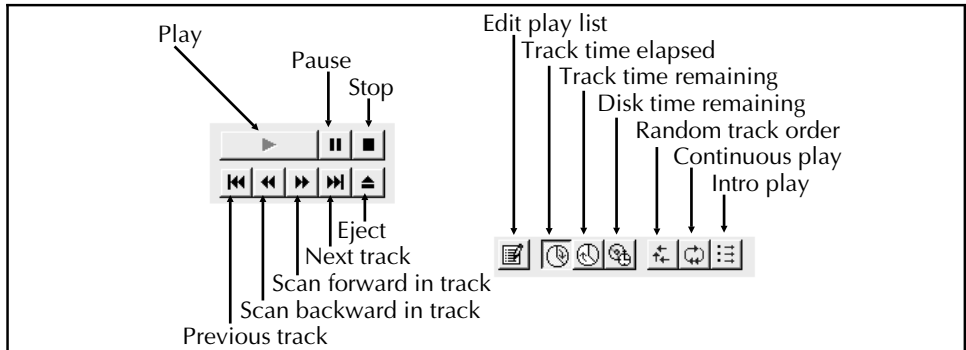
The CD Player is a control panel that lets you play music CDs in your computer’s CD-ROM drive. Besides the standard start, stop, and pause controls, you can create play lists in which you type in artist, title, and track names for a CD, then create a list of tracks you want to play. CD Player remembers the information you entered for each CD and then automatically brings up the information the next time you place the CD in the CD-ROM drive.

The CD Player window is shown here. If your window doesn’t look similar, make sure the Toolbar, Disk/Track Info, and Status bar options are check-marked on the View menu.



CD Player controls

Figure 22-1.



Just slip a music CD in your CD-ROM drive, then start the CD Player.

(If you have more than one CD-ROM drive, you can put a CD in each.) In this illustration, I've already typed in the artist, title, and track information. Figure 22-1 describes the buttons on the CD Player front panel.

Some play options on the toolbar you'll find useful are described here:

- **Random Track Order** Allows you to play tracks in random order. If more than one disk is available, this option selects tracks from each CD.
- **Continuous Play** Replays a CD after the last track is played.
- **Intro Play** Plays a short introduction for each track so you can preview a CD. The length of the introduction can be controlled on the Preferences dialog box, as discussed later.

Setting Options and Preferences

You can change various options for CD Player on the View and Options menus. For example, the CD Player's digital window can display the time that has elapsed for the current track, the time remaining for the current track, or the time remaining for the remainder of the disk. To change the digital display, choose one of the following options on the View menu or click one of the buttons on the toolbar:

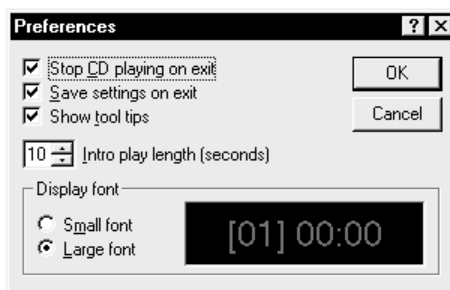
- **Track Time Elapsed** The elapsed time for the current track
- **Track Time Remaining** The time remaining for the current track
- **Disc Time Remaining** The time remaining for the remainder of the disk



T ip: Click the CD Player display to switch among these different time views.

To change the volume, click the Volume Control option on the View menu. The Volume Control panel appears. It is discussed later in this chapter. The Volume Control only works if your headset or speakers are connected to your sound board, not the jack on the front of the CD-ROM player.

Choose Preferences on the Options menu to set special options. The following dialog box appears:



The options are listed here:

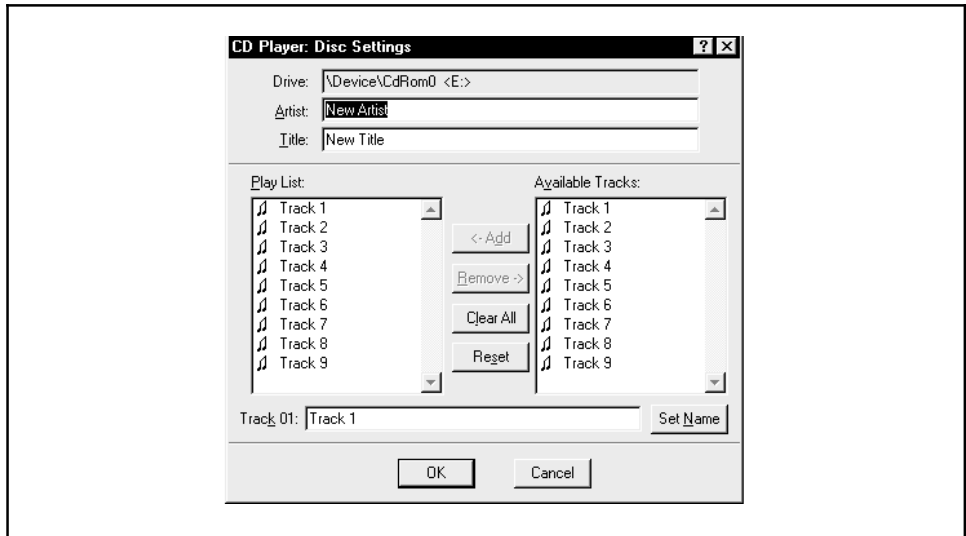
- ⇒ **Stop CD playing on exit** Stops the CD when you close down CD Player. Otherwise, music continues to play in the order you've selected.
- ⇒ **Save settings on exit** Make sure this option is set if you want to save the title and track information you type in the CD Player fields.
- ⇒ **Show tool tips** Leave this option on to display a description of toolbar buttons when you point to them.
- ⇒ **Intro play length (seconds)** This is the length of time that you will hear each track when you choose Intro Play from the Options menu. This option plays a short introduction for each track so you can preview a CD.
- ⇒ **Display font** Choose a small or large font for the CD Player display.

Creating and Editing a Play List

The CD Player's play list lets you catalog CD titles, then create a play list that plays tracks in any order you choose. For example, you can play track 3 first,

Editing a play
list in CD
Player

Figure 22-2.



then track 5, then track 10, and so on. You can even add a track to the play list several times to make that track play more than once in the same play list.

Choose Edit Play List from the Disc menu to create or edit artist, title, and track names for the CD that's in the player. You see the dialog box shown in Figure 22-2.

Fill in the Artist and Title fields, then start typing the track names. Click with the mouse in the lower text field labeled Track 01, then type the name of the first track. Press ENTER to add the name to the Available Tracks list. When you press ENTER, the lower field name changes to reflect the next track so you can continue typing track names and pressing ENTER until all the track names are entered. When you're done, click OK to save the list or create a play list by following the instructions below.

All the titles are automatically added to the play list on the left side of the dialog box. You can remove tracks from the play list or add more tracks. You can also clear the whole play list and start over.

- ⇒ **Add a track** To add a track, click it in the Available Tracks list, then click the Add button. The track is added to the end of the play list.
- ⇒ **Add a track again** You can add a track to the play list more than once. Just click the track and click the Add button.

- ⇒ **Reposition a track** To reposition a track in the play list, click it, then click it again and drag it up or down.
- ⇒ **Remove all tracks** Click Clear All to remove all the tracks and start over with your own play list.
- ⇒ **Remove a track** To remove a track from the play list, click it, then click the Remove button.
- ⇒ **Restore the original list** To restore the original track play list, click the Restore button.



Caution: Be sure to click OK when you're done editing to save your changes.

Multidisc Play Options

If your system has more than one CD drive, click the Multidisc option on the Options menu to listen to music on multiple discs. Choose Random Order on the Options menu to randomly skip to different tracks among the different discs.

To switch to a different CD, click the arrow next to the Artist box, then click the disc you want to listen to. CD Player knows what drive the disc is in.

Media Player

Media Player is an accessory for playing multimedia files and devices. You can use it to open and play wave sound files, MIDI files, and video files. You can also start and control devices like laser disc players and external video equipment, as well as play CD music discs. Most importantly, Media Player is a tool for adding multimedia sound and video objects to documents. It gives you control over how pasted media objects appear in documents and the type of controls that are available when the objects are played. Figure 22-3 shows what an embedded video object looks like during playback. Notice the controls at the bottom of the window.

Keep in mind that Media Player is not meant to replace other accessories that play media, like Sound Recorder or CD Player. It's another tool you can use to open and play different multimedia files and devices. Media Player appears when you double-click a multimedia file, so it's a good idea to know a little about its controls.

For the following discussion, I'm assuming you have a sound board in your system and that you might have other controllable devices such as laser disc

A video
playback
window

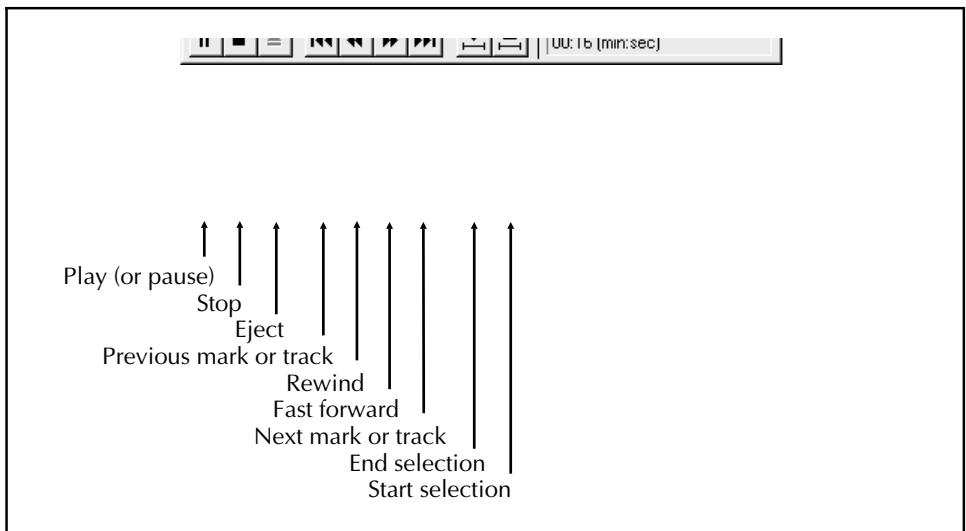
Figure 22-3.



players and video equipment. To play MIDI files, you must have a MIDI-compatible sound module or music keyboard attached to a MIDI port on your system.

Media Player Controls

Double-click Media Player in the Accessories group of the Program Manager to display the Media Player window, as shown in Figure 22-4.



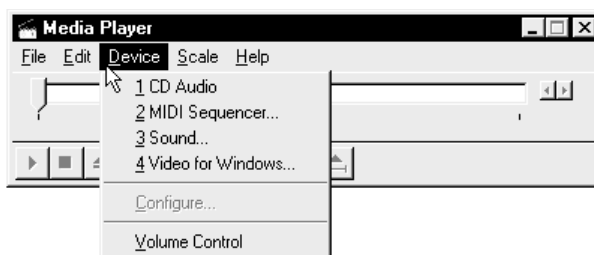
Media Player
Figure 22-4.

Media Player is easy to use. It has control buttons like Play, Pause, Stop, and Eject that resemble the controls on a tape deck. The scale and slider bar tell how much of a media file Media Player has played back. You can slide the pointer on the scale to skip ahead or to skip backward in the media content.

Opening Media Files and Devices

One of the simplest ways to open and play sound and video files is to double-click the files in the Explorer or a folder window. You can also select the type of media you want to play by opening the Device menu in Media Player. You'll see options like PIONEER LaserDisc and VISCA VCR Device if those devices are attached to your computer. You'll also see CD Audio, which you can use to play a CD music disk in your CD-ROM drive (instead of using CD Player).

To open a media file, either choose Open on the File menu or select the MIDI Sequencer, Sound, or Video for Windows option on the Device menu, as shown here:



If you choose an option on the Device menu, you only see files listed that work for the device you chose, but if you choose Open on the File menu, all the files show.

Playing a File

You click the Play button to start playing back a file or device. Click Pause or Stop to halt playback. If a device has many tracks, you can click the Previous or Next button to move from track to track. Click the Fast Forward or Rewind button to move forward or backward in a media file or device.



T ip: To automatically rewind or automatically repeat a selection, open the Edit menu and choose Options, then click the Auto Rewind and/or Auto Repeat options.

The scale is a slider bar with a time, frame, or track scale. Media Player displays the most appropriate scale for the device you selected, but you can change it by choosing a different scale from the Scale menu. Track is used for CD audio, but you can change the scale to display Time.



Tip: To move forward or backward through the time or track scale, click the scroll bar button and drag, or click the right-arrow or left-arrow button.

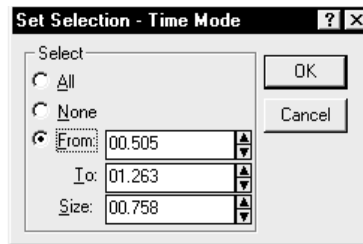
Marking and Copying Selections

You can play a selection of the sound or video by marking in and out points. Move the slider to the starting point, then click the Start Selection button, then move the slider to the ending point and click the End Selection button. Next, press ALT-P to play the selection.



Tip: Click Copy Object on the Edit menu to copy the selection to the Clipboard so you can paste it elsewhere.

You can also open the Edit menu and choose Selection to manually select a portion of the media you want to play or copy. The following dialog box opens:

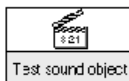
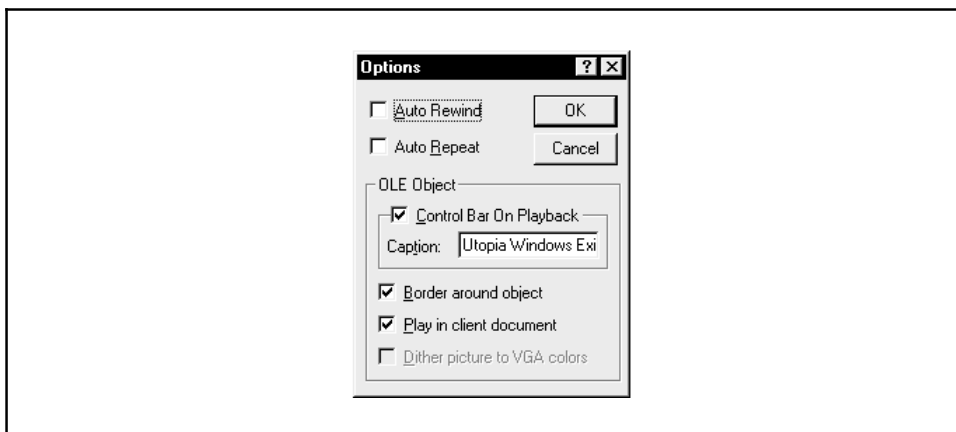


Click From, then specify the exact From and To points for the selection.

Creating Linked Objects

Once you've made a selection, you can copy it to the Clipboard, then paste it as a linked object in another file. Media Player objects appear in other documents as clapper board icons. You can see clapper board icons in the following illustration. When a user double-clicks the object to play it, the object appears with controls, as shown on the right of this illustration (unless you copy the object without controls):

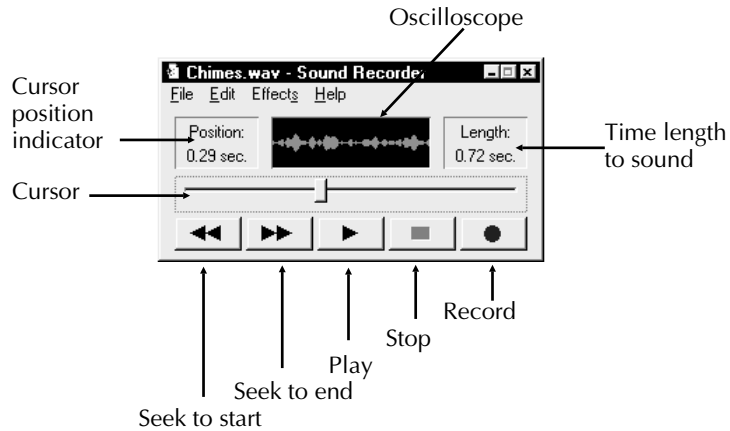
Where to
specify
options for
media objects
Figure 22-5.



You can set playback options and appearance settings for media objects that you are pasting in other documents by opening the Options dialog box. It is shown in Figure 22-5.

First, select the part of the media that you want to copy, then choose Options on the Edit menu. After setting options, choose Copy Object on the Edit menu, then switch to the application window where you want to paste the object and choose Paste. The settings on the Options dialog box are described here:

- ⇒ **Auto Rewind** After the media plays, it is rewound to the beginning. The user can then play it again.
- ⇒ **Auto Repeat** Automatically plays the media again.
- ⇒ **Control Bar On Playback** Makes Media Player controls appear when the object plays.
- ⇒ **Caption** Type the caption you want to appear under the pasted object in the target document.
- ⇒ **Border around object** Creates a box around the object when pasted in the document
- ⇒ **Play in client document** Set this option if you want the object to play while the document remains open.
- ⇒ **Dither picture to VGA colors** When you display a high color image like video on a VGA display, image quality is lost since the image is



The Sound Recorder

Figure 22-6.

converted from hundreds or thousands of colors to only 16. Dithering may make the image more discernible.

Sound Recorder

The Sound Recorder, shown in Figure 22-6, is a handy but somewhat limited digital recorder. It is useful for creating voice recordings that you can include in documents and e-mail messages, or for creating new system sounds like those you hear when you start Windows or make selections. It's also useful for previewing and listening to wave files. You can even perform some rudimentary editing with Sound Recorder, although you should use a more sophisticated sound editor if one is available. True sound editors provide enhanced editing features that let you cut, copy, and paste blocks of recorded sound from one place to another in a file with ease. Your sound board may come with such a utility.

Playing a Pre-Recorded Sound

Windows 95 comes with a variety of sounds you can play right away. Choose the Open command on the Sound Recorder File menu, then open the Media folder, which is a subfolder of the Windows folder. Choose any of the wave files you see listed there.



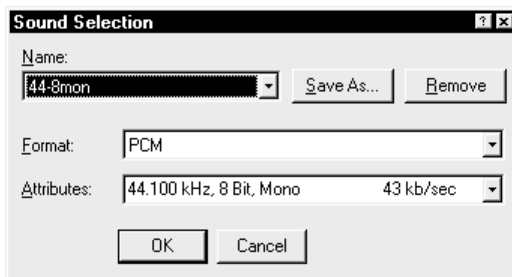
T ip: A fast way to listen to all the wave files in the Media folder is to open the folder window and double-click each sound object. The Sound Recorder quickly opens, plays the sound, then closes.

Once you've loaded a sound file with the Open option on the File menu, you can click the Play button to play the sound. Use these controls as well:

- ⇒ Click Pause to stop the sound temporarily.
- ⇒ Click Rewind to go back to the beginning.
- ⇒ Click Forward to go to the end of the sound.
- ⇒ Move the slider button to any part of the sound and click play to play a sound in the middle.

Recording New Sounds

To record a sound, first attach a microphone to your sound board or a patch cable from another sound source, such as a CD audio player or stereo. To customize recording options, choose Properties from the file menu, then choose Recording Formats in the Format Conversion field, and click the Convert Now button. The Sound Selection dialog box appears:



In the Name field, specify the quality of sound from the pull-down list: CD Quality, Radio Quality, or Telephone Quality. When you choose a different option in the Name field, note the contents of the Format and Attributes fields, which show the recording options and disk space requirements (in seconds) for the option. You can create your own recording formats by changing the values in the Format and Attributes fields, then clicking the Save As button and typing a new name for the format. Note that you can choose different recording rates, bits values (8 bit or 16 bit) and stereo or monophonic recording. Choose 16-bit over 8-bit recording to prevent annoying background distortion, but keep in mind that you'll need more disk space. More disk space is required for higher recording rates (44.100

kHz compared to 22.050 kHz) and stereo recording. If you're just recording your voice on a single microphone, use monophonic settings to reduce disk requirements.



Note: See “Changing Multimedia Settings on Your Computer” later in this chapter for a more complete discussion of these special settings.

Start Recording

Once you've connected a microphone or a patch cable to a device like a tape deck or CD player, and after you've set the recording options discussed above, you can start recording as follows:

1. Click the Record button. Recording starts immediately. The message bar indicates that the Sound Recorder is recording and displays the maximum amount of time you can record. Watch the Length panel if you're concerned about the recording time.
2. Click the Stop button when you're done recording.
3. Save the sound by choosing the Save As option on the File menu.

Sound Editing Techniques

You can edit a pre-recorded sound file or edit a recording you just made. If you're editing a pre-recorded sound, first open the sound, then save it under a new name so you can retain the original sound. In the following discussion, an *insert* refers to the recording or addition of a new sound that copies over (and deletes) existing sounds beginning at the insertion point. Sound beyond the insertion point is not “moved over,” or preserved. A *mix* refers to combining existing sounds with new sounds recorded from the insertion point forward.



Tip: Open several versions of Sound Recorder on your desktop. Then you can work with several different sounds and copy and paste sounds between Sound Recorder windows.

Deleting Before or After the Current Position

An important editing technique is to remove unnecessary portions of sound at the beginning and end of recordings. If you're recording a voice from a

microphone, the beginning of the sound often contains a few moments of silence or “microphone bumps” that should be removed. The end of the sound recording might have unnecessary silence or white noise.



Tip: Removing unnecessary parts of a recording not only improves the quality of the recording, but saves disk space as well by reducing the size of the sound file.

Here is how to delete these sounds:

- ⇒ To delete sound at the beginning of a recording, position the cursor and choose the Delete Before Current Position option on the Edit menu. This removes all sound before the cursor position.
- ⇒ To delete at the end of a sound, position the cursor and choose the Delete After Current Position option on the Edit menu.

Both of these options are a little tricky because you have to find the exact cursor position where you want to stop or begin deleting sound. Follow these general steps to position the cursor:

1. Listen to sound and determine where you want to stop or begin deleting. Write down the time you see in the Position field for the begin or end point.
2. Position the cursor at that position, then press Play to review the sound and hear if that is the position.
3. Reposition the cursor to a more exact position and press Play again to hear if that is the right position.
4. Repeat these steps until you find the exact position, then choose one of the delete options on the Edit menu.

Sound Enhancements

Sound Recorder comes with a number of unique sound enhancements that you can use to improve recording and to create entirely different sounds. You can use these enhancements to have fun while creating a whole set of new sounds to add to your sound library. How to do this is outlined later in this section.



Tip: If you don't like the changes you've made to a sound with an enhancement, choose Revert from the File menu. All the changes you made since the last time you saved the file are removed.

Changing the Volume Choose the Increase Volume or Decrease Volume option on the Effects menu to change the volume of the entire sound. Repeat the option to further increase or decrease the volume.

Changing the Speed Choose the Increase Speed or Decrease Speed option on the Effect menu to change the speed of the entire sound. Repeat the option to further speed up or slow down the sound.

Adding an Echo Choose the Add Echo option to add an echo effect to a sound. In most cases, you need to repeat the command several times before you hear what sounds like a reasonable echo.

Reversing the Sound Choose the Reverse option to flip a sound around and play it backward.

Enhancing a Recording

You can add to a recording with one of the following techniques. The sound you add can be a sound you just recorded or a pre-recorded sound file that you've opened.

- ⇒ Append new sound to the end of an existing sound by clicking the Seek to end button. The cursor moves to the end of the recording.
- ⇒ Record over sound at the end of an existing recording by positioning the cursor where you want to start recording. All existing sound from that point on is recorded over.

As I mentioned earlier, to locate a point in a sound, play the sound and note the time in the Position field where you want to make the insertion. You might need to position the insertion point and click Play several times to "listen" for the insertion point. Once you know the insertion point time, slide the cursor to it and start recording.

Press the Record button after you've positioned the cursor, then record your new sound and press the Stop button. Save the new sound when you're done recording it, but if you don't like the new recording you can always choose Revert from the File menu and try again.



Caution: The Revert option removes all changes since the last time you saved the file, not just the last change. Save your recording when you like the changes you've made before you make additional changes.

Inserting Other Sound Files

If you already have a sound stored as a file on disk and you want to insert it into your existing sound, use the Insert File option on the Edit menu. A sound you insert this way copies over existing sounds forward from the insertion point. To insert a sound file:

1. Listen to your existing sound to locate the place where you want to start inserting sound, then position the slider there.
2. Choose Insert File and specify the file you want to insert.

You can prepare a sound insert in a second Sound Recorder window to make editing easier. Open another copy of the Sound Recorder, then open an existing sound file or record a new sound. Now edit the sound and save it as a file. Switch back to the other Sound Recorder window and insert the file.

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Tip: Using this last technique, you can save a sound insert as a file and use it over and over. An alternative cut and paste technique is discussed next.

Inserting Sounds with the Copy and Paste Technique

It's best to open at least two Sound Recorder windows to do the cut and paste techniques discussed here. You edit a sound in one window, then choose Copy from the Edit menu, and then switch to the other Sound Recorder window and choose Paste Insert. Follow these steps to copy and paste sounds:



Note: The Copy option copies the entire sound in the Sound Recorder window, so you should remove any unnecessary sounds before you make a copy.

1. Follow the instructions under "Deleting Before or After the Current Position" earlier in this chapter to get just the sound you want to copy.
2. Add any enhancements by choosing Options on the Effects menu.

3. When you have the sound insert the way you want it, choose Copy from the Edit menu.
4. Switch to the Sound Recorder window where you want to insert the new sound.
5. Position the cursor and choose Paste Insert from the Edit menu.



Note: The Paste Insert option copies over (removes) any sound to the right of the insertion point.

Mixing Sounds

With mixing techniques, you can combine existing sounds with new sounds. Basically, the new sound overlays the existing sound without any loss of volume or quality to the existing sound.



Note: “Loss of quality” is a relative term. Every time you mix sounds, there is some reduction in quality.

When you insert a sound from a file or paste an insert, the sound mixes with the existing sound, starting at the insertion point. The two mixing techniques are:

- ⇒ **Mix With File** Opens a dialog box so you can choose a sound file to mix into the existing sound, starting at the insertion point.
- ⇒ **Paste Mix** Pastes the sound on the Clipboard into the existing sound, starting at the insertion point.

Tricks for Working with Sound

Windows has four sound files that are automatically installed when you run setup. They are called Chimes, Chord, Ding, and TaDa and you'll find them in the Media folder (which is inside the Windows folder). Other sound files can be installed as well, but we'll work with the four default files in the following sections since most readers are likely to have them on disk.



Tip: As you're creating new sounds, think of ways you might use them. I created a very interesting introduction and exit sound to record on the answer message of my answering machine.

Working with the default sounds, you can create a whole collection of new sounds. For example, try the following:

1. Open the sound called Chimes, then increase its speed by choosing Increase Speed on the Effects menu.
2. Listen to the new sound, then choose Save As from the File menu and save it with the name Chimes+2 (to indicate it is twice as fast).
3. Increase the speed again, then choose Save As and save the new sound as Chimes+3.

You can use these new sound files later when you're creating other sounds. For example, you could insert Chimes+2 at the end of another sound file.

4. Open the original Chimes file and decrease its speed by choosing Decrease Speed on the Effects menu.
5. Save the new slower sound as Chimes-2 (to indicate it is slower).

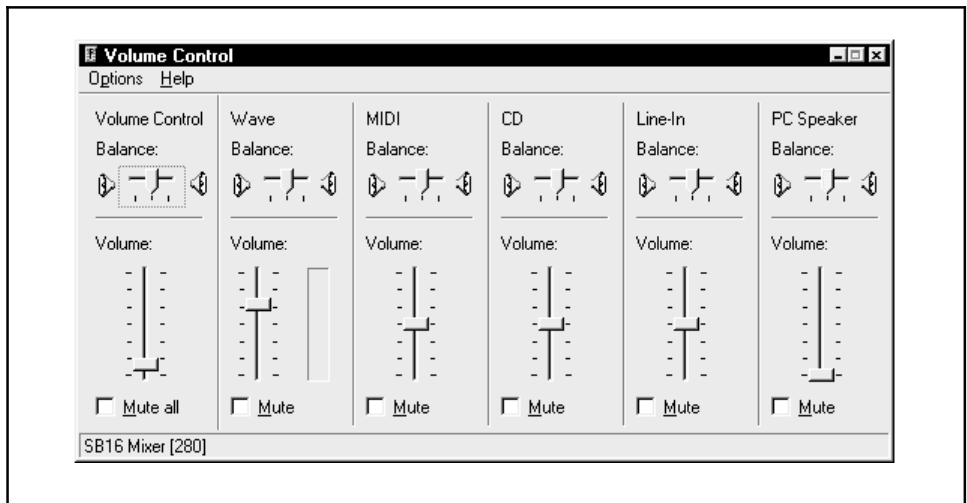
Slowing Chimes down produces a lot of interesting individual sounds that you can edit out to create single-strike gong sounds. Here's how to edit out an individual portion of Chimes:

1. Open Chimes and slow it down twice.
2. Edit the sound to extract the last low gong. Position the cursor and press Play until you find the beginning of the gong. (On my computer, I positioned the cursor at 1.24 sec, then deleted sound before the cursor position.)
3. Position your cursor and choose Delete Before Current Position from the Edit menu.
4. Remove unnecessary sounds at the tail end of the gong by positioning the cursor and choosing Delete After Current Position from the Edit menu.
5. Click Save As from the Edit menu and name the new sound Gong.
6. Try changing its speed even more, or apply special effects from the Effects menu with the Echo or Reverse command. If you like the changes, save them under a different filename.

Here are more tricks for creating new sounds:

- ⇒ You can create eerie, low-frequency sounds by capturing a small portion (1 second or less) of a sound and then slowing it down five or six times. Speeding up a sound creates interesting electronic beeps that you could add to system error messages.
- ⇒ Create a sound that repeats. Choose Copy from the Edit menu to copy the entire sound to the Clipboard, then position the cursor at the end of the sound and choose Paste Insert on the Edit menu. Repeat these steps for the number of times you want the sound to repeat.
- ⇒ When you insert a sound, there is often an unpleasant gap between the existing sound and the new sound. To create a smooth transition, use the mixing options (Paste Mix and Mix with File) on the Edit menu. Scroll to the end of the current sound, and then drag it to the left just a small amount, then mix in the new sound. When you play it back, the new sound starts as the previous sound begins to fade out.
- ⇒ Before mixing in a new sound, change the volume of the current sound or the sound you want to mix in. Once they're mixed, you can only change both sounds together.

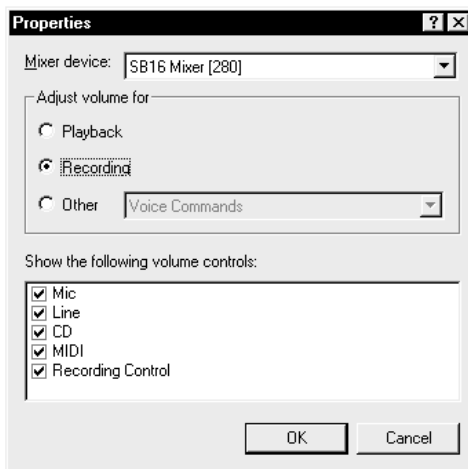
There are an incredible number of sound possibilities, more than this book has space to describe. Keep experimenting. If you enjoy working with sounds, look for sound editors that provide more advanced features than Sound Recorder. Most sound boards come with useful sound-editing utilities that make copying, cutting, pasting, and other kinds of editing easier. They



The Volume Control
Figure 22-7.

Changing the
Volume
Control panel
options

Figure 22-8.



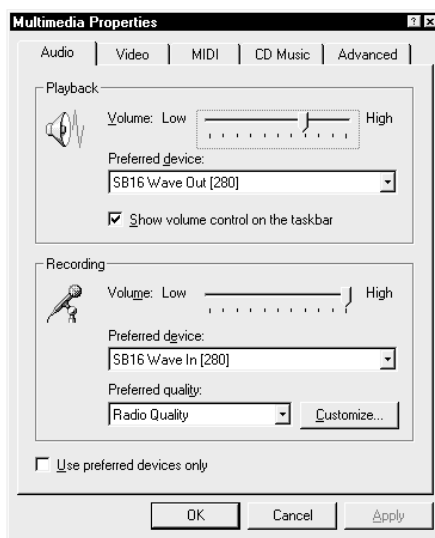
often include special effects, such as the ability to fade sound in or out, and multitrack options for mixing sounds on individual tracks.

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Controlling the Volume

Use the Volume Control to control the amplitude of sound on multimedia devices. It serves as a master control where you can adjust the stereo balance

Multimedia
Properties
dialog box
showing the
Audio
properties tab
Figure 22-9.



and volume of the input and output devices attached to your system. The Volume Control is shown in Figure 22-7.

Adjust the volume of your device as follows:

- ⇒ To adjust the master balance and volume of all devices, slide the cursors in the Volume Control field box on the left.
- ⇒ Adjust the volume and balance of individual devices by adjusting the sliders in the remaining boxes on the right.
- ⇒ Click the Mute button to silence a device.

To adjust the volume of recording devices, choose Properties on the Volume Control Options menu. You'll see the dialog box shown in Figure 22-8. Click Recording and OK to adjust recording levels, or Click Other and Voice Commands to adjust voice input.

Changing Multimedia Settings on Your Computer

To change the multimedia settings on your computer, open the Control Panel and double-click the Multimedia utility. You'll see the Multimedia Properties dialog box shown in Figure 22-9. Notice the tabs for Audio, Video, MIDI, CD Music, and Advanced settings. Each setting is discussed in the following sections.



Note: The dialog box shown in Figure 22-9 opens when you choose various options on multimedia accessories. For example, if you choose Audio Properties from the Edit menu in the Sound Recorder, the Audio Properties tab pictured in Figure 22-9 appears.

Audio Settings

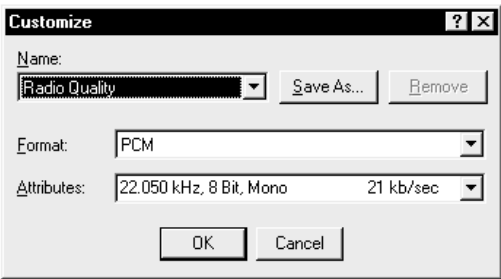
The Audio tab on the Multimedia Properties dialog box (see Figure 22-9) is where you change audio playback and recording settings, as described below:

- ⇒ **Volume (Playback and Recording field)** Set the default master volume for playback or recording when using any device.
- ⇒ **Preferred device (Playback and Recording field)** If you have more than one multimedia adapter, you can choose the adapter you prefer to use for playback or recording in these fields.
- ⇒ **Show volume control on the Taskbar (Playback field)** If this option is enabled, you see a speaker icon on the right side of the Taskbar. Click it to display the following volume control, then drag the slider up

to increase volume or down to reduce. To completely disable sound, click Mute.



➡ **Preferred quality (Recording field)** Click the down-arrow to choose CD Quality, Radio Quality, or Telephone Quality. CD Quality is the best, but uses more disk space. Telephone Quality is for voice only and uses the least amount of disk space. Click the Customize button to set special audio options. You see the following dialog box:



Choose a special compression option in the Format field and/or a special record setting in the Attributes field. The Attributes field lists a variety of sampling rates and bit values. *Sampling rates* are the number of times audio values are recorded per second and *bit values* are the number of bits used to store the information. Setting these values high improves sound quality but requires more disk space to store the sound. The default settings for the three values in the Name field are:

Value	Default Setting
CD Quality	44.100 kHz, 16 Bit, Stereo at 172,000 bytes per second
Radio Quality	22.050 kHz, 8 Bit, Mono at 21,000 bytes per second
Telephone Quality	11,025 kHz, 8 Bit, Mono at 10,000 bytes per second

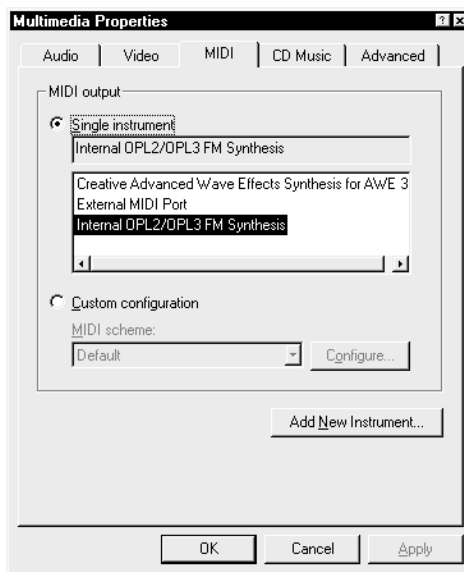
You can create a setting of your own. It will appear in the Name field (similar to the CD, Radio, and Telephone Quality options) that has a quality setting:

- 1. Click the down-arrow button in the Name field.**
- 2. Choose Untitled.**
- 3. Pick a special setting in the Format and Attributes field.**
- 4. Click the Save As button, then type a name in the box that appears. For example, I picked 11,025 kHz, 8 Bit, Stereo in the Attributes field and called the new setting “Stereo Telephone Quality.”**

Once you create the setting, it appears when you open the dialog box in multimedia applications. (For example, if you choose Audio Properties from the Edit menu in the Sound Recorder, you see the dialog box pictured in Figure 22-9.)

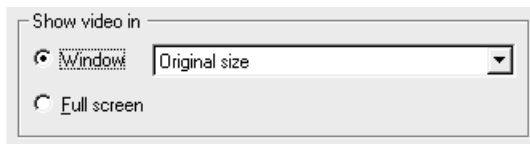
MIDI settings
in the
Multimedia
Properties
utility

Figure 22-10.



Video Settings

When you click the **Video** tab on the **Multimedia Properties** dialog box (see Figure 22-9), you see the options in the following window:



Low-quality video usually appears in small windows, so you should select the Window option. If you choose Full screen, low-quality video is stretched and may appear distorted. The Full screen option is useful when the video is of higher quality or if you can tolerate low-resolution video at full-screen size. When the Full screen option is set, video only appears full screen if you double-click directly on a video file.

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MIDI Settings

The dialog box for the **MIDI** tab on the **Multimedia Properties** utility is pictured in Figure 22-10. The settings on this dialog box control how

MIDI's 16 channels send event changes to electronic devices like keyboard synthesizers. Event changes are note on/off messages, volume changes, and other similar musical activities. If your sound card has a built-in MIDI synthesizer, you can direct all MIDI events to that sound card. If you have an external MIDI synthesizer as well, you can direct some of the MIDI channels to the external MIDI device and some of the channels to the MIDI synthesizer on your sound card. You make these changes on the MIDI dialog box.

Click the Single Instrument button if you have only one MIDI device or if you want to direct all MIDI events on all channels to a single device. Then click the device in the list box.

Click the Custom Configuration button to choose a custom MIDI channel scheme or create a new custom scheme. If you already created a custom scheme, select it in the MIDI Scheme drop-down list box.

To create a new MIDI scheme, follow these steps:

1. Click the **Configure** button.
2. In the dialog box, click a channel number in the **Configuration** field, then click the **Change** button.
3. Choose a MIDI device in the **Instrument** field that you want to direct the channel to.

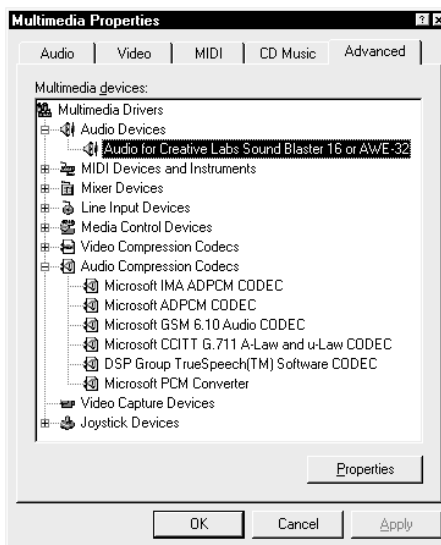


Note: If you need to add a new instrument besides those listed, click the **New Instrument** button. An installation wizard appears to help you install the new instrument.

4. After configuring the appropriate channels, click the **Save As** button and type a name for the new MIDI scheme.

CD Music Settings

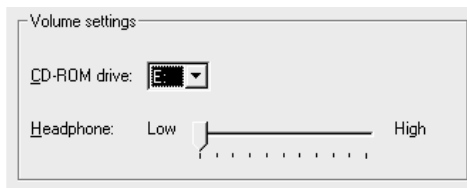
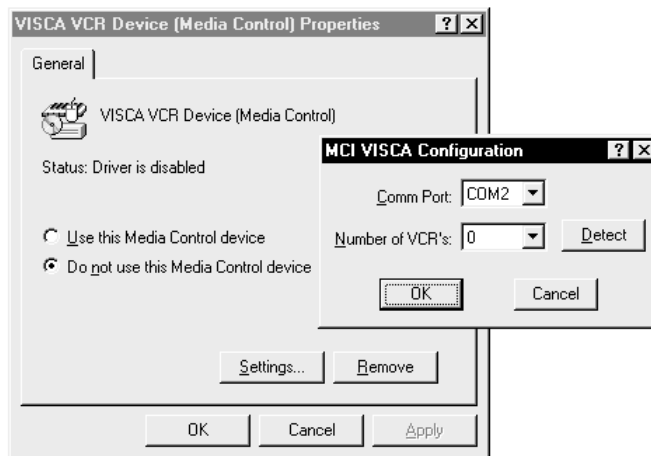
Click the **CD Music** tab on the **Multimedia Properties** dialog box to change the volume level of music played in your computer's CD-ROM drive. You'll see this dialog box:



Advanced settings in the Multimedia Properties utility
Figure 22-11.

Double-click a multimedia device to view or change settings

Figure 22-12.



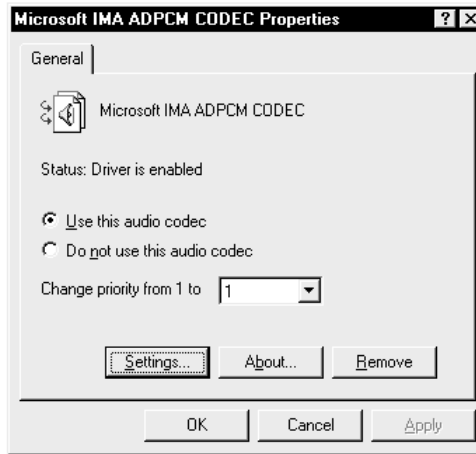
If you have multiple CD-ROM drives, choose a drive in the CD-ROM drive field, then set the volume in the Headphone field.

This setting may not control the volume for headsets or speakers connected into the output jack of your CD-ROM. It may only control the volume of the output connector on your sound card.

Advanced Settings

Click the Advanced tab on the Multimedia Properties dialog box (see Figure 22-9) to view or change the settings of multimedia devices, or to remove a device. You see a dialog box similar to the one shown in Figure 22-11.

A typical
codec
properties box
Figure 22-13.



Note: Refer to Appendix A if you need to control the resources (IRQs, I/O Ports, memory settings) of hardware devices like sound cards.

Here's how you view or control the settings of multimedia devices on your computer:

1. Click the plus sign next to an item to expand the list of devices.
2. Click a device in the list, then click the Properties button. You see a dialog box with various options for controlling the device. For example, the VISCA device listed under Media Control Devices is shown in Figure 22-12. The overlapping dialog box is what appears when you click the Settings button.
3. Change the settings of devices as appropriate.

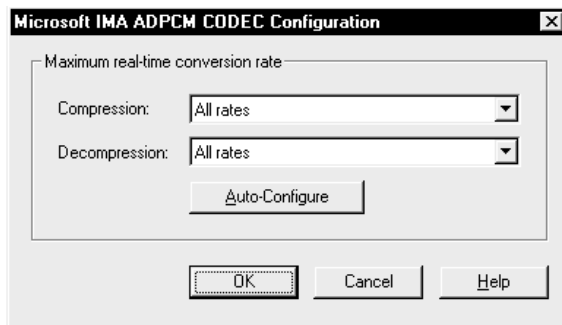
About Codecs

You can change codec (coder/decoder) settings for the Windows 95 multimedia subsystem by opening either the Video Compression Codecs option or the Audio Compression Codecs option. Audio and video codecs are discussed in the two remaining sections in this chapter. You see a list of codecs for

which you can change settings. You can also remove the codec or change its priority settings (the order that Windows 95 will use the codec).

For example, if you double-click the Microsoft IMA ADPCM CODEC, you see the dialog box shown in Figure 22-13. You can disable the codec by clicking the “Do not use this audio codec” option, or you can change its priority settings by changing the value in the lower field.

If you click the Settings button, you see the following dialog box for changing the compression and decompression rates that the codec uses by default:



Click the Auto-Configure button to change the settings to best fit your computer setup.

Audio Compression Manager

The Windows 95 Audio Compression Manager (ACM) includes the following codecs to handle the compression or decompression of audio data:

- ⇒ **TrueSpeech codec** A voice-oriented codec developed by DSP Group. Use this codec for voice-only recordings that you want to compress and transfer over networks or telephone links. TrueSpeech does not perform real-time compression but does decompress in real-time.
- ⇒ **Microsoft GSM Audio codec** A real-time compression codec that lets you choose a range of sampling rates. Use this codec for voice recordings only.
- ⇒ **Microsoft CCITT G.711 A-Law and U-Law codec** This codec provides compatibility with telephony standards in Europe and North America and provides 2-to-1 compression ratios.

- ⇒ **Microsoft ADPCM codec** This codec provides a real-time compression and a non-real-time compression option for multimedia authors. The non-real-time compressor generates audio files that sound better.
- ⇒ **IMA ADPCM codec** This codec was defined by the Interactive Multimedia Association for use on multiple multimedia platforms. It offers real-time compression and is similar to the Microsoft ADPCM codec.
- ⇒ **Microsoft PCM converter** This converter is included to allow 8-bit sound cards to play 16-bit audio samples. You can also use this codec to play a sample at 1 megahertz rate on a card that supports another rate.

Image Compression Manager

Compression is essential for digital video. Standard PC data transfer channels are otherwise incapable of pushing enough data through to keep up with a video data stream. The Windows 95 Image Compression Manager (ICM) includes the following codecs to handle the compression and decompression of video data:

- ⇒ **Cinepak** A commonly used codec that multimedia authors use to compress low-quality video (320 × 240, 15 frames per second). It is commonly used for multimedia titles, but requires very long compression times (12 to 16 hours for ten minutes of video).
- ⇒ **Indeo** An Intel codec that provides fast compression and decompression when used with Intel hardware.
- ⇒ **Microsoft Run-Length Encoding** This codec is best used for compressing animation that includes bitmap images. It does not handle changes between frames well.
- ⇒ **Microsoft Video 1** A relatively fast compression codec for moderate-quality video.

Here are some additional compression standards for still image and motion video compression that you are likely to come across when you install video-related applications.

- ⇒ **JPEG (Joint Photography Experts Group)** A still-image compression standard that discards colors that the eye can't normally detect.
- ⇒ **MPEG (Motion Pictures Experts Group)** A standard for compressing full-motion video and CD-quality audio. MPEG is available in several versions, the latest of which supports HDTV (High-Definition TV) data rates.

⇒ **Px64** A group of codecs for use in video-conferencing applications. The quality of video varies to support the different throughput rates of computer networks and telecommunication facilities.

Of these additional codecs, you are most likely to see MPEG in Windows 95 applications because Microsoft helped define an industry standard MPEG (along with the Open Computer MPEG Consortium).

This chapter presents procedures for backing up and protecting the data on a computer. It discusses the Microsoft Backup utility, which you can use for all your backup requirements. The Backup utility can protect files in case they are stolen, the hard drive fails, or an accident occurs. If you plan to move a large number of files from one place to another, you need to know about Backup since it simplifies the process. There are two ways you can back up files:

- ⇒ You can back up files on your hard disk to a floppy disk or other media by using simple copy techniques like drag and drop.
- ⇒ You can use the Microsoft Backup utility, which compresses files and puts them in an archive. Once you've done that, you can copy the compressed files to a floppy drive, tape drive, or other backup device.

The Backup utility is located in the System Tools folder. Click Start, the Programs, Accessories, and System Tools. If you don't find Backup there, it probably wasn't installed when you set up the system. To install it, start the Add/Remove Program utility in the Control Panel, click the Windows Setup tab, then click the Disk Tools option in the window. Finally, click OK to install the Backup utility, and then follow the directions on the screen.

One thing to keep in mind if you decide to use the Microsoft Backup utility is that you must also use the utility to restore the files. Restoring the files may pose a problem if you need to restore them on a system that doesn't have Microsoft Backup or is not running Windows 95. Use other backup methods if this is the case.

Backup Considerations

To protect your data, you need to back it up on a regular basis. There are several types of backups and several types of backup procedures. Before you back up any files, consider what your backup strategy is going to be:

- ⇒ Back up the entire system on a regular basis or whenever you make major changes to its software, directory structure, or data configurations. You might do this once a month or more.
- ⇒ Perform incremental backups to back up the files that have changed since you last made a major backup. You might do this once a week or once every other day.
- ⇒ Store backup files away from your home or office to protect them from local disasters, such as fires. In other words, take your backups home or keep them in the car. Place sensitive data in vaults, if necessary.
- ⇒ Run a test restoration to get familiar with the restore procedures. You could back up a single file or folder, then restore it immediately.

afterward (before you change any files) to make sure you know how to restore backup files.

This chapter focuses on the Backup utility, but many useful backup strategies don't require Backup. Data files that you create and edit on a regular basis need to be backed up, but if you're busy, you can just copy these files to diskette on a daily basis, but back up your complete system or other files on a weekly or monthly basis.

Why You Need to Back Up on a Regular Basis

Some people assume that they can simply restore their programs from the original disks in the event of a system failure. But installing an entire operating system and all your programs is a huge task. Over time, most people tinker with their system settings to get the desktop just right. They have shortcuts to their favorite programs and other amenities. It takes time to rebuild a setup like that, but a complete system backup can help you restore your setup quickly and smoothly.

Another reason to make a complete system backup on a regular basis is because Windows 95 and your applications make "hidden" changes to files that you might not know about. Windows 95 uses the Registry, an information database, to keep track of all the changes you make to options, settings, programs, and other features. The Windows 95 Backup utility backs up the Registry as well as "hidden" files. That makes it the best tool for doing a system backup in Windows 95.

Backup Strategies

Most people work on sets of files over short periods of time, not on many different files in many different folders. For example, you might work on Project X one week, then Project Z the next. The simplest backup procedure is to copy the files you work with each day to a floppy disk at the end of the day. To make backing up easier, store all the files pertaining to one project in a common folder, then just copy the folder to a floppy disk. If you have more files to back up than will fit on a single floppy disk, you can compress them using a compression utility like PKZIP (PKWARE, 9025 N. Deerwood Drive, Brown Deer, WI 53223). PKZIP is a shareware utility that you can download from most online services like CompuServe.

Another strategy is to copy your files to another hard drive. If you are on a network, you could even copy the files to a hard drive on another computer. In my case, I work with a lot of different operating systems and applications, and I occasionally have to clear all the data from a hard drive and reformat the disk. For these situations, I attach a "spare" hard drive to my system.

Before I clear the data from a hard drive, I copy the entire contents of the drive to the spare hard drive for safekeeping. The spare drive is a SCSI drive, so I can plug and unplug it from any system I have without having to configure anything. All I have to do is reboot the computer.



Tip: Archiving is another important reason for backing up data. *Archiving* means to move unused files from the hard drive to tape or to a disk in order to free hard disk space and keep the hard disk from getting cluttered.

The most common backup medium is tape, although optical disk backup systems are becoming more common. Tape has the advantage of letting you store the entire contents or at least most of the contents of the hard drive on a single tape (whether you can store it on one tape depends on the tape drive and tape size). The Backup utility supports QIC (quarter-inch cartridge) tape, which is well established in the computer industry as a means for backing up data.

Backup Rotation Techniques

You should maintain more than one set of backup disks or tapes to protect your data from theft and fire. Obviously, one of the sets must be stored at a remote site, and that means you need to know about rotation methods. I discuss tape rotations here, but the same techniques apply to rotating floppy disk backups and backups made using other media. You don't need to follow these steps precisely, but the techniques described here will help you develop a strategy that fits your needs.

The least complex tape rotation scheme is to use three tape sets—the current backup, the previous backup, and the backup from two weeks ago. Each tape contains one week's worth of information. You start with a full backup on Monday, then create an incremental backup each day until Friday. On the following Monday, you insert a new tape and start the process all over again. The current backup stays with the machine, the previous backup goes in a nearby place, and the two-week-old backup goes to an off-site location where it is safe from thieves, fire, and natural disasters. If you do a backup while you're using your system, open files might not get backed up under this rotation technique.

Another common tape backup rotation is the "Grandfather" method. It requires 22 tapes or tape sets, depending on the amount of data you want to back up. Here's how it works:

1. You label five tape sets "Daily," five tape sets "Weekly," and twelve tape sets with the months of the year.

2. Every Monday, you start with the Daily tapes that correspond to the week of the month (the first Monday of the month you would use “Daily1,” the second Monday of the month “Daily2,” and so on).
3. On Tuesday, Wednesday, and Thursday, you make incremental backups.
4. On Friday, you retrieve tapes from wherever they are stored off-site, you create another full backup, and you send the tapes to the off-site storage place.
5. Always use the tapes that correspond to the current week of the month.
6. At the end of every month, you make another full backup and place it in storage off-site.

The Grandfather strategy allows you to retrieve data from a year ago, if necessary, and ensures that you never lose more than one week’s worth of data. Because you keep the daily backups nearby, you can retrieve up to a month’s worth of data without having to wait while a tape is retrieved from storage off-site.

Consider replacing backup disks or tapes on a regular basis. There are two schools of thought in this area. The first advocates replacing tapes after a certain amount of time has passed, and the second says to replace the tape after a certain number of uses. Tapes are supposed to last for five years, but humidity and heat can reduce the life of a tape. I recommend that you replace a tape after forty uses.

The Backup Utility

The Backup utility backs up files on a computer to floppy disks, tape drives, or to a hard drive on either a desktop computer or a network computer. Some networks have a backup server designated to hold backup files from many different computers. Check with your network administrator for details about backing up to these servers.

The Backup utility supports the following tape drives standards:

- ⇒ **Floppy controller drives** QIC-40, QIC-80, QIC-3010, QIC-Wide with QIC-80 tapes only (not wide tapes).
- ⇒ **Parallel port drives** Colorado Trakker 120, 250, and 3010.

The QIC standard covers a whole series of tape formats, including mini-cartridges (collectively called the DC2000 series) with formats in the 60MB to 120MB range. The newest standards use DC6000 cartridges with capacities in the gigabyte (GB) range. There are proposed standards for 10GB and 35GB tapes.

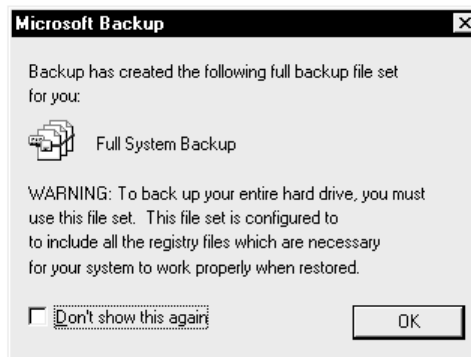
Every time you run Backup, you can specify which files you want to back up or you can create **backup sets**. (Backup sets are files that hold specific information about drives, folders, and files that you want to back up.) Then, when you want to run the same backup again at a later time, you start Backup, open the backup set file, and run it. There are two types of backup sets:

- ⇒ **Full System Backup** The Backup utility already includes a full system backup set that backs up all the files on the hard drives, including hidden files, system files, and the Registry. (The Registry stores important settings for Windows and your programs.)
- ⇒ **Custom Backup Sets** A custom backup comprises drives, folders, or files you specify. You can create as many custom backup sets as you like. Each is saved as a file with its own name.

Starting the Backup Utility

You start Backup by clicking Start, then choosing Programs, Accessories, and System Tools. Click Backup on the cascading menu. You can also start Backup by right-clicking a drive object, choosing Properties from the shortcut menu, clicking the Tools tab, and clicking the Backup button.

The first time you start Backup, you see the Welcome to Microsoft Backup dialog box. On this box, you can click the “Don’t show this again” checkbox in the Welcome to Microsoft Backup dialog box if you don’t want to see the welcome dialog box the next time you start Backup. When you click OK, Backup automatically creates a backup set called “Full System Backup” and displays the following dialog box:



Note: A backup set is a preconfigured file that specifies a set of drives and folders to back up. You load a backup set to repeat a previously configured backup.

Click OK to see the Microsoft Backup window pictured in Figure 23-1. This is the window you will see from now on when you start Backup if you clicked the “Don’t show this again” checkbox in the previous dialog boxes.

The left pane of the Microsoft Backup window displays the drive hierarchy of your system. You click the checkboxes next to drives, folders, and files to include them in a backup. When you click a checkbox, a checkmark appears in the box. To make more folders and checkboxes appear, click the plus sign next to a drive to see a list of branching folders. When you click a drive or folder in the left pane, its contents appear in the right pane. Keep clicking the checkboxes of the drives and folders you want to back up.

When you open a preconfigured backup set that you or someone else already created, you see checkmarks next to specific drives, folders, and files, depending on what is designated for backup in that set.

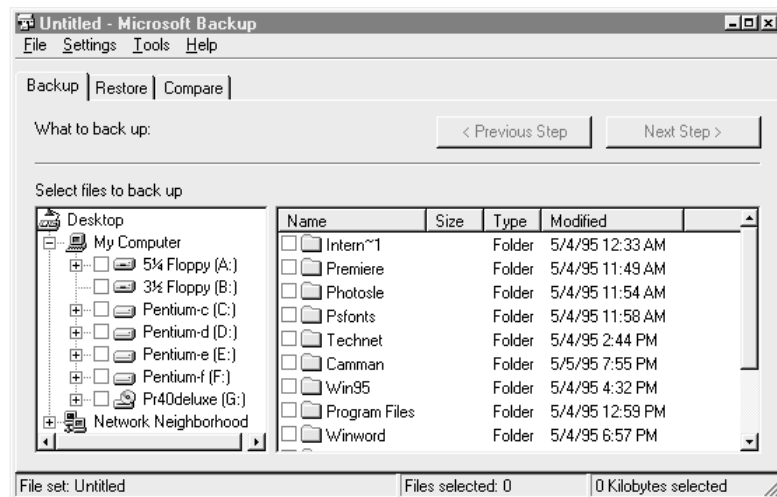
Opening and Creating Backup Sets

Now you’re ready to specify the drives, folders, and files you want to include in your backup set. You can do this in one of the following ways:

- Open an existing backup set and run it unmodified.
- Open an existing backup set, then change the file set to create a one-time only custom backup or create a new backup from it that you can save for later use.

23

The Microsoft Backup utility window
Figure 23-1.



➤ Create an entirely new backup set from scratch.

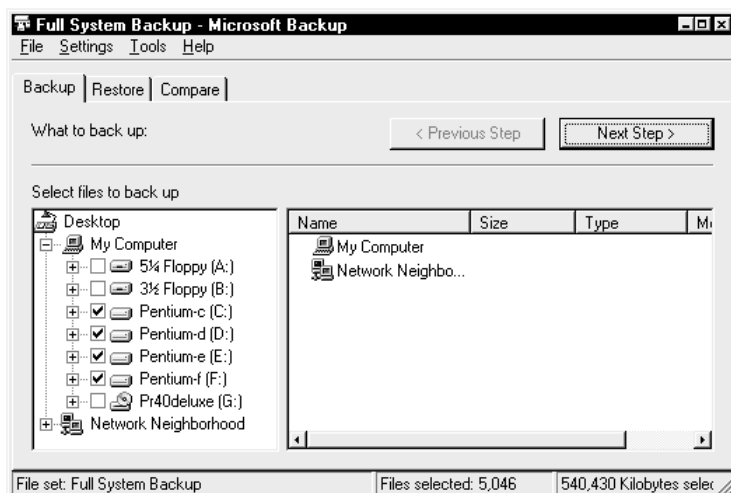
You can open and run the Full System Backup set to back up the hard drives on your system. In the following exercise, we'll open and modify this backup set, then save it with a new filename.



Note: If you want to create an entirely new backup set from scratch, choose Close from the File menu. This removes all existing file selections. Then you can jump ahead to the next section “Including and Excluding Drives, Folders, and Files.”

1. Choose Open File Set on the File menu to display a standard Open dialog box.
2. Existing backup sets are listed in the window. Look for the default Full System Backup set. If you don't see any backup sets, try looking in a different folder.
3. Click Full System Backup, then click the Open button. A dialog box informs you that Backup is checking the Windows 95 Registry, locating files, and getting other information.
4. In a moment, the Backup window displays a list of drives on your system similar to the one shown in Figure 23-2.

The Backup window with the Full System Backup set loaded
Figure 23-2.



Notice the checkmarks that indicate the drives, folders, and files that will be included in the backup. You can now edit this backup set by removing the checkmarks from any drives, folders, or files you don't want to back up.

Including and Excluding Drives, Folders, and Files

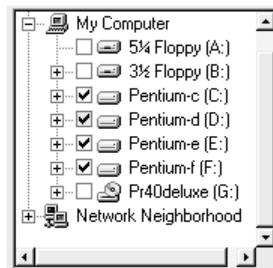
As mentioned, you can create a backup set by changing the contents of an existing backup set or by creating an entirely new backup set. If you only need to back up a few folders or files, I recommend you create a new backup set rather than try to edit an existing backup set.



Tip: You can choose to only back up files that have changed since the last backup. This is called a differential backup. See “Setting Backup Options” later in this chapter.

Here are things you need to know about including and excluding drives, folders, and files:

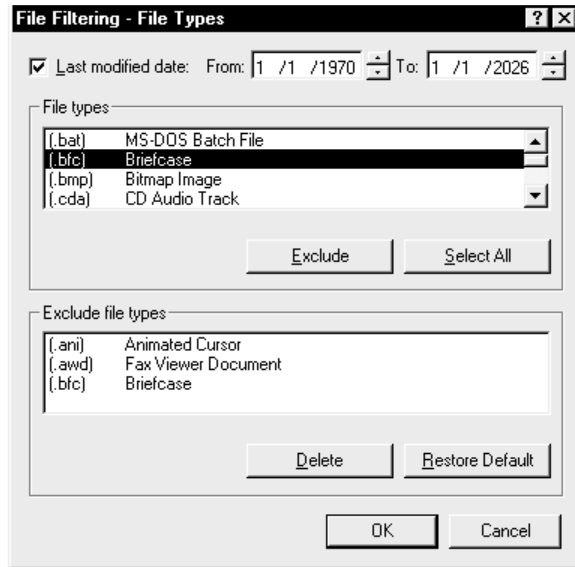
- ⇒ Click the plus sign next to a drive or folder to display the hierarchy of folders underneath it. You can then click a folder to see its contents in the right pane, then include or exclude folders and files in the right pane.
- ⇒ A checkmark in a “darkened” box next to a drive or folder indicates that only some of the files in the drive or folder are included in the backup set. In the following illustration, drive D is marked this way:



- ⇒ A normal checkmark in a white box next to a drive or folder means that the entire contents of the drive or folder are included in the backup set. Drives C, E, and F are marked this way in the illustration above.
- ⇒ If you only want to include some of the contents of a drive or folder, first remove the checkmark to exclude all the contents, then mark only the items you want to include in the right pane.

Using Filters

You can include or exclude files from a backup based on modification dates or file types. Choose File Filtering on the Settings menu to display a dialog box similar to the following:



Choose your settings, as follows:

- **By date** To set a date range for the files you want included in a backup set, click the Last modified date checkbox, then specify a date range for the files you want to include. Only files that were modified in the date range are backed up.
- **By type** You can exclude different types of files by choosing a type in the File Types field and clicking the Exclude button.

Selecting a Destination

Once you've created a backup set, you click the Next Step button in the upper-right portion of the Backup window. Search through the tree in the left pane of the window to locate a suitable backup device. Note that you can choose Network Neighborhood to back up to other computers.

Backing Up to Floppy Disk If you click a floppy disk drive, the name of the drive appears in the field on the right called Selected device or location. Depending on the size of your backup set, you might need to insert more

than one disk in the floppy drive. Be sure to label the disks in the order in which you put them in.

Backing Up to Another Hard Drive on Your System If your system has two hard drives, you can create the backup set on one of those hard drives.

Backing Up to Another Computer on a Network You can store the backup set on a computer attached to your network. Click the plus sign next to Network Neighborhood, choose a computer, then click the plus sign next to one of the computers in the list. A list of shared folders appears. Just click the folder where you want to place the backup file.

Backing Up to a Tape Drive If you're backing up to a tape drive, choose the drive at the bottom of the list. You can choose options on the Tools menu to format and erase tapes. Keep the following in mind:

- ⇒ All new tapes must be formatted before you can back up files to them. Choose Format Tape on the Tools menu to format new tapes.
- ⇒ You can erase a tape to create a new backup set by choosing Erase Tape on the Tools menu.



Note: You can change settings on the Options dialog box to format or erase tapes automatically during a backup session, as discussed in the next session.

Setting Backup Options

You can set various options for backups by choosing Options on the Settings menu. Each option is described here:

- ⇒ **Quit Backup after operation is finished** Set this option to close the Backup window when a backup is complete.
- ⇒ **Full Backup of all selected files** When set, all files are backed up, even if they have not changed since the last backup.
- ⇒ **Differential: backup of selected files that have changed since the last full backup** Only changed files are backed up.
- ⇒ **Verify backup data by automatically comparing files after backup is finished** Backed-up files are compared with the originals to ensure that they were copied without error.
- ⇒ **Use data compression** Compresses backed-up files in order to save disk space.

- ⇒ **Always format on tape backups** The tape in the drive is automatically formatted before the actual backup begins. A tape that is already formatted is not reformatted.
- ⇒ **Always erase on tape backups** The tape in the tape drive is automatically erased and previous backup data is removed.
- ⇒ **Always erase on floppy disk backups** The disk in the floppy drive is automatically erased and any previous backup information is lost.

Saving a Backup Set

At this point, you can save your backup set specifications to a file so you can back up data in the same way in the future. Click **Save As** on the **File** menu, then specify a location where you want to save the file.



Note: Any settings you make on the Options dialog box are saved with a backup set for future use.



Tip: If you save the backup set on the desktop, you can perform quick backups by dragging and dropping the backup set onto the Backup utility icon. See the “Creating Backup Shortcuts” section later in this chapter for details.

Starting the Backup

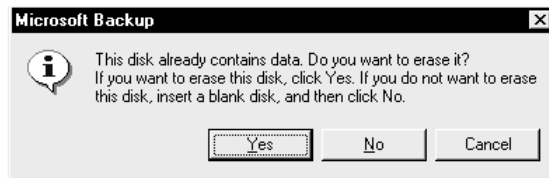
Once you’ve selected a backup set or created a new one, you’re ready to start the backup. Click the **Next Step** button on the Backup window, as pictured in Figure 23-2. You can also click the **Previous Step** button to return to the file selection window. A dialog box appears so you can type a name for this backup set. Be sure to type a descriptive name.

Click the **Password Protect** button to type a password for the backup set. If you apply a password, the backup set cannot be restored without typing the password.

Once you click **OK**, a dialog box similar to the following appears to show the progress of the backup. (You might be prompted for additional diskettes or tapes as the backup proceeds.)



When you insert a diskette or tape, you might see a dialog box similar to the following that warns you that the existing media already has information or is write-protected. Click Yes to erase the existing data.



Note: Disks must be formatted before Backup can write to them. Formatting a disk is easy in Windows 95, even in the middle of a backup. First, minimize the Backup window, then open the My Computer window, right-click the floppy drive object where the disk is located, choose Format, then follow the instructions in the next chapter for formatting disks.

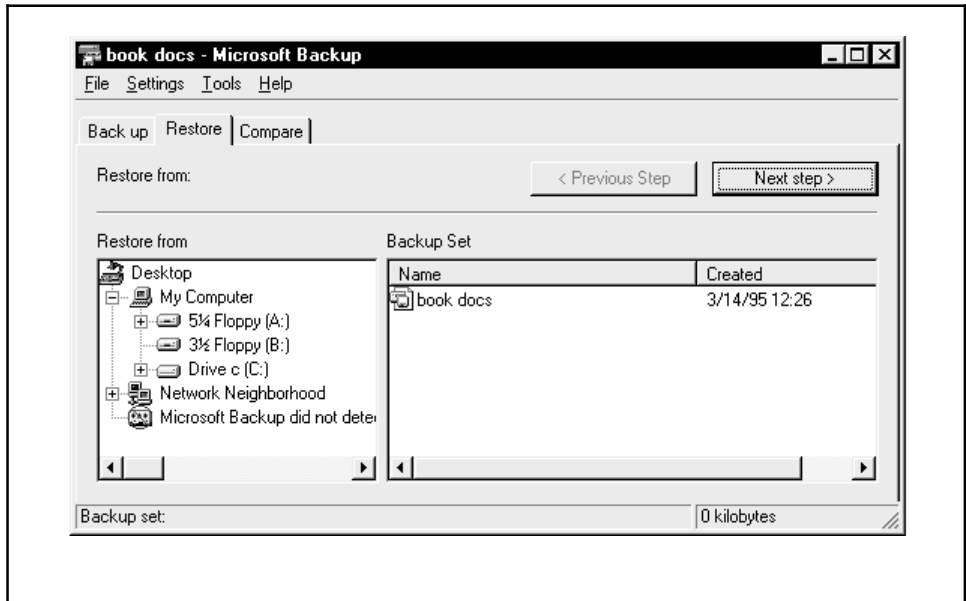
Once the backup is complete, a message appears to indicate that it was successful. You can start another backup session or close the Backup window. If you backed up to floppy disks or a tape, be sure to put labels on the disks or tape that indicate the name and sequence number in the backup.

Restoring a Backup Set

Once you've created a backup, you may never need to open it. On the other hand, you might need to retrieve backups to review old records or restore a file that was corrupted or accidentally erased. The procedures for restoring files are covered here.

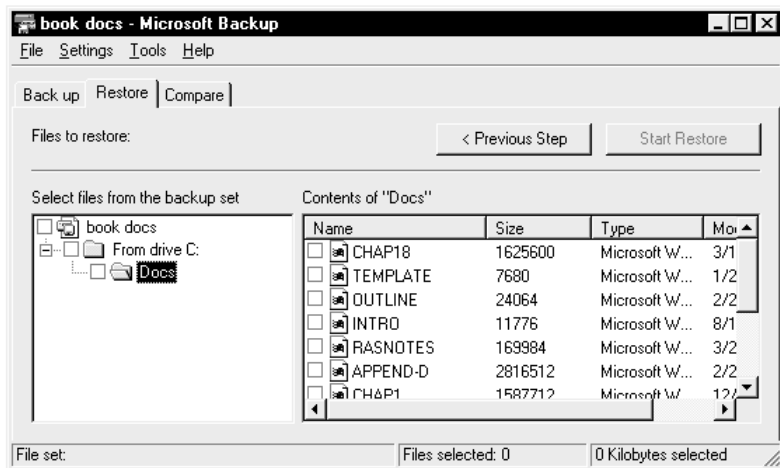
Start the Microsoft Backup utility to restore a file, then click the Restore tab. A window similar to the one shown in Figure 23-3 appears. A list of devices

Locating a backup set to restore
Figure 23-3.



appears in the left pane. Place the media containing the backup in one of the devices, then click the object for the device in the left pane. The right pane then shows backup sets on the media. In Figure 23-3, the floppy disk in drive B contains a backup set called “book docs.” It is shown in the right pane.

To restore the files in the backup set, click the backup set in the right window pane, then click the Next step button. The following dialog box appears, where you can select the files you want to restore:



In this example, you can click the checkbox next to Docs in the left pane to restore all the files, or click the checkboxes next to individual files in the right pane to restore them.

Once you've selected files to restore, click the Start Restore button. The files are extracted from the backup set and restored to their original locations.

Setting Restore Options

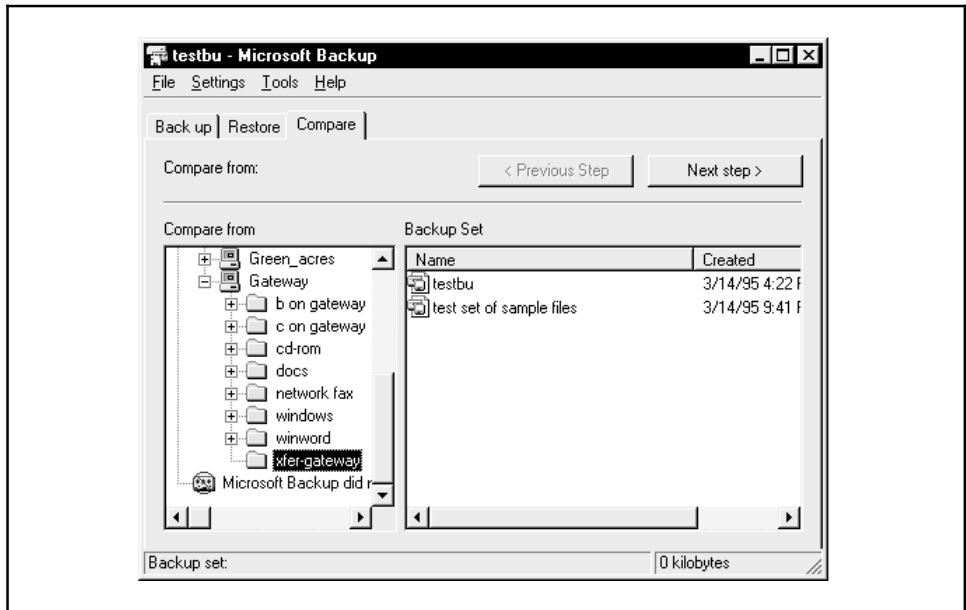
You can set special options to gain more control over how backup sets are restored. Choose Options on the Settings menu, then click the Restore tab to view the Settings - Options dialog box. Each option is described here:

- ⇒ **Quit Backup Applet after restore operation** Closes the Backup utility after the restore is complete.
- ⇒ **Original locations** Restores files to their original locations.
- ⇒ **Alternate location** Restores files to a location other than their original location. This is useful if you are restoring files on another computer that doesn't have the same directory structure, or if you don't want restored files to overwrite the original files.
- ⇒ **Alternate location, single directory** This option is the same as the "Alternate location" option, except that it restores the files into one folder.
- ⇒ **Verify restored data by automatically comparing files after the restore has finished** Ensures that the restored files are copied accurately.
- ⇒ **Never overwrite files** Prevents files with the same name from being overwritten.
- ⇒ **Overwrite older files only** Restored files overwrite files of the same name if they have an older date.
- ⇒ **Overwrite files** Files with the same name are overwritten by files in the restore set. Check "Prompt before overwriting files" if you want to see an option box that lets you choose whether to overwrite a file.

Comparing Backup Sets

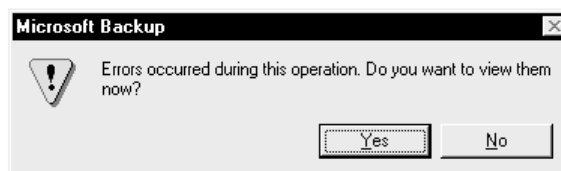
Using the Compare tab in the Backup window, you can instruct the Backup utility to detect differences between files in the backup set and files on your disk. You click the Compare tab on the Backup window to start a compare operation. Compare produces an error report that lists files that have changed. It also lists files that have been added to a drive or folder that don't exist on the full backup of the drive or folder.

Choosing a
backup set to
compare
Figure 23-4.



For the following example, I backed up three files, then changed two of the original files and ran a compare with the backup set. Here are the steps for this operation:

1. Click the Compare tab on the Backup window, as shown in Figure 23-4.
2. You need to locate the backup set. In this case, I copied it to a drive on another computer attached to my network, so I click the plus sign next to Network Neighborhood, click the plus sign next to the computer, then click the folder that contains the backup set.
3. Click the backup set to compare in the right pane, then click the Next step button.
4. A dialog box appears so you can make sure the files to compare are check-marked.
5. Click the Start Compare button to begin comparing files. A dialog box appears, showing you the status of the comparison.
6. If differences are detected, you see the following dialog box:



7. Click Yes to view the error log. Each file discrepancy is listed along with an explanation of the problem.
8. Once you know this information, you might want to create a new backup set that includes new and changed files, or simply back up the new or changed files to a differential backup set. You can do this by choosing Options on the Settings menu, then selecting the Differential backup option.

Compare Options

You can set options for comparing backup sets with files by choosing Options on the Settings menu, then clicking the Compare tab. The options are as follows:

- ⇒ **Quit Backup Applet after compare operation** Closes the Backup utility after comparing files.
- ⇒ **Original locations** Compares files in the backup set with the files in the location where they were originally backed up.
- ⇒ **Alternate location** Compares files in the backup set with files in another folder. You might check this option if you moved the original files or if you are comparing the backup set with files on another computer.
- ⇒ **Alternate location, single directory** Specifies that the original files are now in a single directory.

Creating Backup Shortcuts

You can start a backup by using drag and drop techniques. The trick is to drag a file that represents a backup set over the Backup utility and drop it. You are then prompted to run the backup. If you want to do that, the backup procedure starts immediately. The Backup window never opens. Instead, you see a message dialog box that shows the progress of the backup. You might be prompted for tapes or diskettes.

To make this technique work, you need to do the following:

1. Create backup sets in advance by starting Backup, selecting the files you want to back up, choosing a backup destination, and saving the backup set. Store it in a convenient place, preferably a folder where other backup sets are stored. You can even put the backup sets on the desktop.
2. Create a shortcut to the Backup utility on the desktop. Right-click the desktop, then click New and Shortcut. Type **Backup** in the command line field and click Next to complete the operation.

3. To start backups, simply drag a backup set file over the Backup utility shortcut and drop it.



Note: You cannot drag and drop shortcuts of the backup sets.

Changing the Drag and Drop Settings

Choose Drag and Drop on the Settings menu to change the drag and drop characteristics. You see the following dialog box:



The options in this dialog box are described here:

- ⇒ **Run Backup minimized** The Backup utility does not run in an open window.
- ⇒ **Confirm operation before beginning** Makes sure that you are prompted before a backup begins so you can decide whether to follow through with the backup.
- ⇒ **Quit Backup after operation is finished** Closes the Backup Window after the backup is complete.

If you use the Backup utility often for many different types of backups, be sure to try the drag and drop techniques described above. They are sure to simplify your backup procedures.

Windows 95 includes utilities to help you format diskettes, check diskettes and hard drives for errors, defragment disks, and do other types of maintenance. You can access these utilities by opening the Start menu and choosing Programs, then Accessories, then System Tools. This menu appears:



Note: If you don't see some of these utilities, they were probably not set up when you installed Windows 95. Refer to "Installing and Removing Windows Components" in Chapter 25 for information on installing these utilities now.

Here is what these utilities do:

- ⇒ Disk Defragmenter optimizes disks. Refer to "Defragmenting the Files on Your Drives" later in this chapter.
- ⇒ DriveSpace compresses a disk and creates more storage space. Refer to "Compressing Disks with DriveSpace" later in this chapter.
- ⇒ ScanDisk checks a disk for errors. Refer to "Error-Checking a Disk with ScanDisk."

Besides the Start button, there is another way to access the disk utilities: right-click a drive and choose Properties from its context menu, then click the Tools tab. The following dialog box appears. (The Sharing tab only appears if networking options are installed.)



This dialog box provides information about the last time you checked the drive for errors, backed up files, and defragmented the disk.

- ⇒ Click Check Now to run the ScanDisk error-checking utility.
- ⇒ Click Defragment Now to defragment a disk.



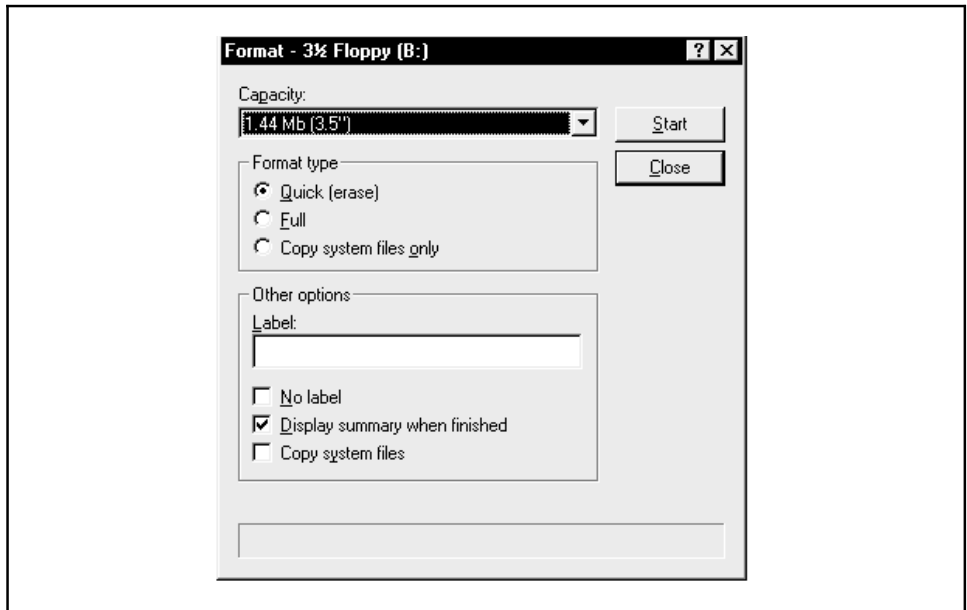
Caution: Only use disk utilities that are designed for Windows 95. The Windows 95 file system is significantly different from the file system used in DOS and previous versions of Windows. If you use utilities designed for those file systems, you might damage the Windows 95 file system.

Formatting a Disk

Formatting a disk means to establish the tracks and sectors on the disk where files will be stored. You must format all diskettes and hard drives before Windows 95 and applications can write files to them. Note that your Windows drives are already formatted, as are other drives that hold data. You may only need to format floppy disks on which you plan to store backup files or files you send to other people. However, if you add a new hard drive or you decide to completely erase a disk and start over, you need to format it first. Windows 95 won't let you format disks if it is using files that are on the disk.

Choose
Format on a
drives context
menu to see
the disk
formatting
options

Figure 24-1.



If you right-click a disk drive object in the My Computer window, you see a shortcut menu with the Format option. Click the Format option to format a disk in the drive. The Format dialog box in Figure 24-1 appears.

Here are the options for formatting disks:

- ⇒ **Capacity** Choose another format capacity. You would select a lower-density format if you were sending a disk to a person whose computer has a low-density drive.
- ⇒ **Format Type: Quick (erase)** In the format type field, choose the Quick (erase) option to format the disk without checking for errors. This option simply erases the previous file table and is OK if you know a disk is good.
- ⇒ **Format Type: Full** Choose the Full option to check the disk for errors. The Full option takes longer because it performs a “real” format rather than a “quick” format. That means it reestablishes the sectors and tracks on the disks. Some previously formatted disks can only be reformatted using this option, not the Quick option.
- ⇒ **Format Type: Copy System Files Only** Choose this option to copy the system files to a disk that is already formatted. This makes the disk bootable.

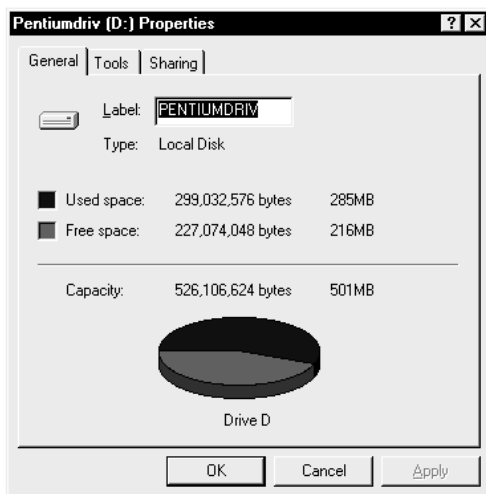
- ⇒ **Label** Type an electronic label (name) for the disk in this field. Some programs look at this name to make sure the correct disk is installed.
- ⇒ **No Label** Click this option if you don't want to apply a disk label when you format a disk.
- ⇒ **Display summary when finished** Click this option to get information about the disk after it is formatted. You'll be able to see if the disk has a lot of bad sectors. If so, discard it.
- ⇒ **Copy system files** Click this option to copy the system files during the formatting process. If system files are on a disk, you can start your computer with that disk. They are not necessary on disks you only use to store files.

Click the Start button to begin formatting. In the lower part of the dialog box, Windows 95 keeps you updated on the progress of the procedure, telling you how much of the disk is formatted as it reformats your disk. When the formatting is done—and if you clicked the “Display summary when finished” option—a summary window appears. The summary tells you if the disk has a lot of bad sectors.

Getting Information about a Drive

You can get important information about floppy disks and hard disks by right-clicking the drive object and choosing Properties on the shortcut menu. You'll see a dialog box similar to the one shown in Figure 24-2.

Disk
Properties
dialog box
Figure 24-2.



Here's what you can do in this dialog box:

- ⇒ You can change the label of the drive by typing a new name in the Label field.
- ⇒ The Type field indicates whether the drive is a floppy disk, local hard drive, removable hard drive, or CD-ROM disc.
- ⇒ The remaining information and the pie chart give you an idea of how much disk space is in use and how much is available on this disk.

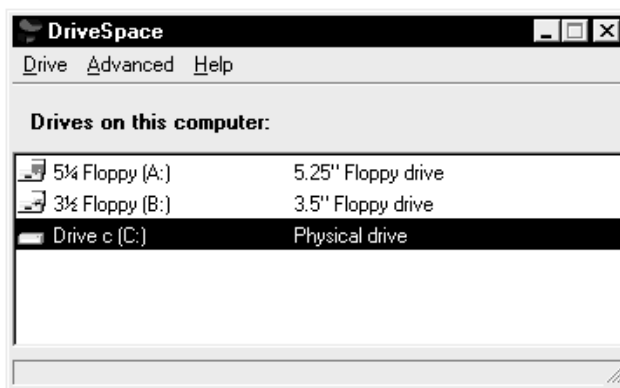
Compressing Disks with DriveSpace

The Windows 95 DriveSpace utility lets you compress hard disk drives and floppy disks to obtain more file storage space. You can often double the available space on an existing drive with DriveSpace. DriveSpace even compresses drives with existing data. DriveSpace also supports drives compressed with DoubleSpace. You can manage DoubleSpace volumes from DriveSpace and have both DriveSpace and DoubleSpace volumes on the same computer.

Compressed drives have the following characteristics:

- ⇒ A compressed drive is really a compressed file that is stored on a hard disk. The compressed file is called a CVF, or *compressed volume file*, and has the filename DRVSPACE.000.
- ⇒ Part of the drive remains uncompressed and is called the *host drive*.
- ⇒ The original disk is assigned a new drive letter, typically drive H, while the compressed file is assigned the original drive letter (drive C or D).
- ⇒ You can compress an entire drive and any data already stored on it, or you can compress just the remaining free space. The first option takes longer because existing data must be compressed.
- ⇒ You can compress floppy disks to almost double the disk space in most cases. You can then use the compressed floppy disks like any other floppy disk, but only in systems that run Windows 95 or MS-DOS 6.x DoubleSpace.
- ⇒ A compressed floppy disk contains a CVF and a host drive. When you put it in a system, Windows 95 displays two drive letters, the CVF (drive A or B) and the host drive (drive H, unless other host drives exist).
- ⇒ Compressed floppy disks normally mount automatically when you insert them in a drive. If one doesn't mount automatically, choose Mount on the Advanced menu.

Choosing a drive to compress
Figure 24-3.



Compressing a Disk with Data on It

To open DriveSpace, click the Start button, then choose Programs, Accessories, and System Tools. Choose DriveSpace on the menu that appears. In a moment, the dialog box shown in Figure 24-3 appears. From here, you can pick the drive you want to compress.

Select a physical drive in the list, then choose Compress from the Drive menu. The following steps explain how to compress a floppy disk, but you can follow the same procedure to compress a hard drive.

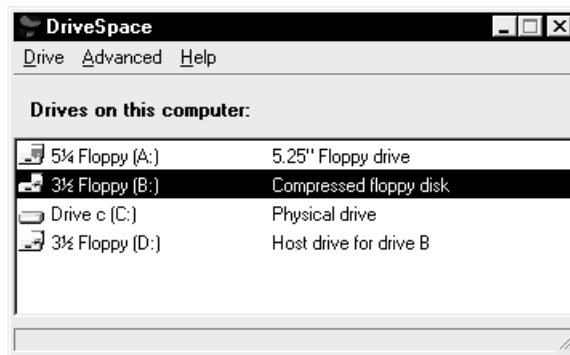
1. On the DriveSpace window, select a drive, then choose Compress on the Disk menu. A dialog box appears that shows estimated compression statistics.
2. Click the Options button to adjust the settings for the host drive. Recall that the host drive is the uncompressed portion of the drive. The dialog box shown in Figure 24-4 appears.
3. You can make the following changes in the dialog box shown in Figure 24-4. When you're done, click OK to return to the Compress a Drive window.
 - ⇒ **Drive letter of host drive** Change the letter assigned to the host drive.
 - ⇒ **Free space on host drive** Adjust the size of the uncompressed host drive in this field. If you have programs that can't run on compressed drives, adjust this value up to make enough space available for the programs.

⇒ **Hide host drive** If the drive space is 2MB or less, this option is set automatically to hide the drive from view. Adjusting the host drive free space disables this option. You might want to hide the host drive to prevent people from tampering with its files.

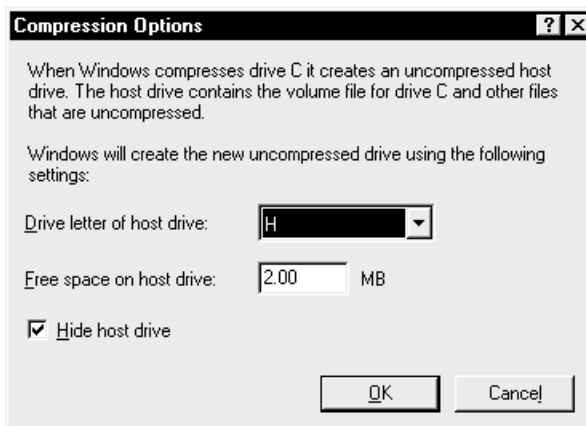
4. Click the Start button in the Compress a Drive dialog box to begin compression.

When the compression is complete, you see a dialog box that shows the actual statistics for the compressed drive.

You'll also see a new drive in the DriveSpace window, as shown here:



If the size of the host drive is greater than 2MB, you'll also see a new drive in the My Computer window.



Adjusting the size of the host drive
Figure 24-4.

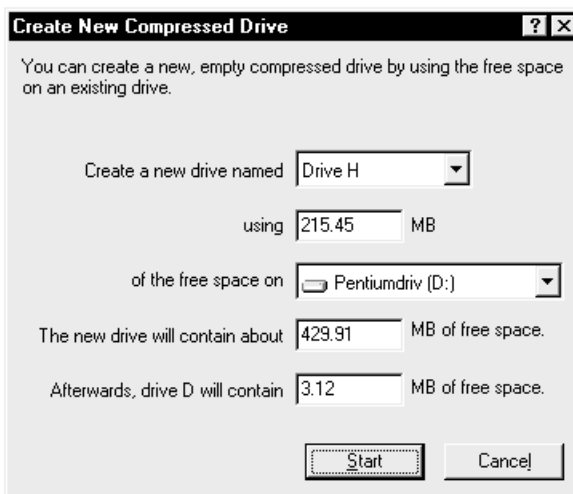
Compressing the Free Space on a Disk

If you have a drive that already contains files but also has a lot of free space on it, you can compress just the free space to create a new compressed drive. The existing data on the drive remains uncompressed. Follow these steps if you want to compress only the free space on a drive:

1. Start DriveSpace; in the DriveSpace window (see Figure 24-3) select the drive that has the free space you want to compress.
2. Click Create Empty on the Advanced menu to open the dialog box shown in Figure 24-5.
3. In the top field, specify a drive letter for the drive.
4. In the second field, specify how much of the free space you want to use.
5. You can choose a different drive in the third field if the one you selected previously doesn't have enough free space. The last two fields provide information about the size of the drives after compression.
6. Click the Start button to accept the settings and start the compression.

Uncompressing and Other Options

There are a few other DriveSpace options you need to know about: you can mount or unmount removable disks, alter the settings of a compressed disk, and uncompress a disk.



Compressing
the free space
on a disk
Figure 24-5.

Mounting and Unmounting Disks

If you place a compressed removable disk in one of your system's drives and you try to access that disk, Windows 95 automatically mounts the compressed disk and its host drive. If you just want to view DriveSpace information about a disk you just placed in a drive, choose the Mount command from the Advanced menu. When you remove the disk, choose Unmount from the Advanced menu.

Adjusting Free Space

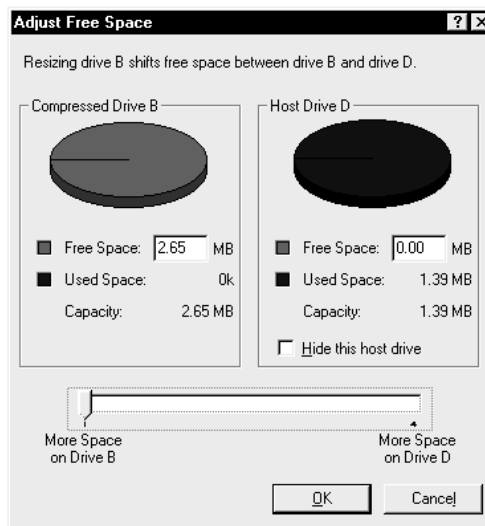
Some programs and files cannot be stored on compressed disks. If you need more uncompressed space on a disk to store such programs, follow these steps:

1. In the DriveSpace window, choose the drive you want to work with.
2. Choose Adjust Free Space from the Drive menu. You'll see a dialog box similar to the one shown in Figure 24-6.
3. Adjust the slider at the bottom of the dialog box to assign space on the compressed drive to the uncompressed drive, as appropriate.

Uncompressing a Disk

You can uncompress a disk by first choosing it in the DriveSpace window, then choosing Uncompress from the Drive menu. You see the statistics window, which shows how much space is on the drive and the space that

Resizing a disk compressed with DriveSpace
Figure 24-6.



will be available after it is uncompressed. The host drive is removed after a drive is uncompressed. If files exist on the host drive, they are copied to the new uncompressed drive and the host drive is removed.

Error-Checking a Disk with ScanDisk

The ScanDisk utility analyzes a disk for errors and attempts to repair those errors. It can check drives that were compressed with the DriveSpace and DoubleSpace utilities, but it cannot check CD-ROM drives, network drives, and drives created by using older DOS commands like ASSIGN, SUBST, JOIN, or INTERLNK.



Tip: Drives that are over a few years old should be checked on a regular basis. A surface check helps prevent data loss by detecting and marking sectors that are bad or failing.

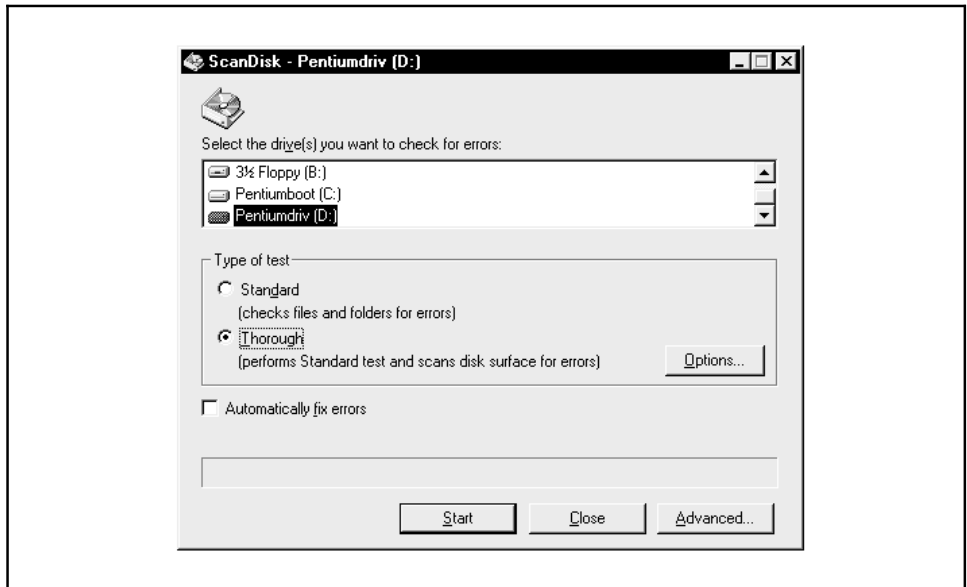
You can start ScanDisk with one of the following techniques:

- Right-click a disk drive object in the My Computer window, then choose Properties. Click the Tools tab on the Properties dialog box, then click Check Now.
- Click the Start button, then Programs, Accessories, and System Tools. Choose ScanDisk from the menu.

In either case, the dialog box shown in Figure 24-7 appears. Running the utility is easy:

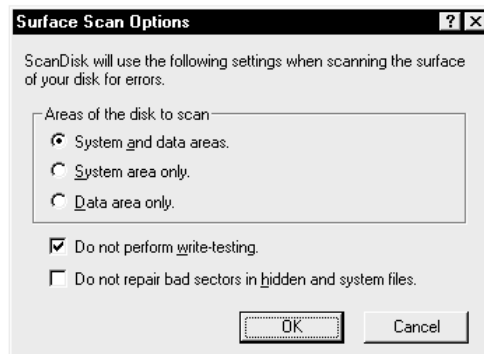
1. In the top field, choose the drive you want to check.
2. In the middle fields, choose Standard to check files and folders for errors, or choose Thorough to check files and folders, as well as the disk surface. The Thorough test takes longer but is recommended, especially if the drive is used extensively or is a few years old.
3. Click the Options button to set special options as discussed under “ScanDisk Options” below. This button is only available if Thorough is checked.
4. Click Automatically fix errors if you don’t want to be prompted every time ScanDisk finds an error that it can fix.
5. Click the Advanced button to set how ScanDisk should handle various error problems, then refer to “ScanDisk Advanced Options” below.

The ScanDisk
main window
Figure 24-7.



ScanDisk Options

If you click the Thorough option and then click the Options button, the following dialog box appears. This is where you select the type of testing you want to perform during the Thorough test:



Drives include both a system area and a data area. Errors in the system area are usually critical and may require that you replace the drive. Errors in the data area can be fixed by moving data to other sectors and marking the defective sectors so they are not used again. Each option on the menu is described here:

- ⇒ **System and data areas** Choose this option to check the entire drive. This is the option you should use in almost all cases, unless you are in a hurry.
- ⇒ **System area only** Click this option to check only the system area. If errors are detected, you should consider replacing the drive. Use this test to quickly determine the integrity of unknown hard drives.
- ⇒ **Data area only** Click this option to check only data areas of the drive. In most cases, choose the “System and data areas” option instead of this option, since the time difference between the two is minimal.
- ⇒ **Do not perform write-testing** During error-checking, data in sectors on the disk is read and then written back to disk. This makes for an exhaustive, but time-consuming, test. Click this option to *read* sectors only and reduce the time it takes to run the check. Read-only tests, however, are not as thorough as read-write tests.
- ⇒ **Do not repair bad sectors in hidden and system files** Select this option if you are using copy-protected programs that store licensing information in specific sectors. Most programs today do not use this copy protection technique so you won’t need to enable this option.

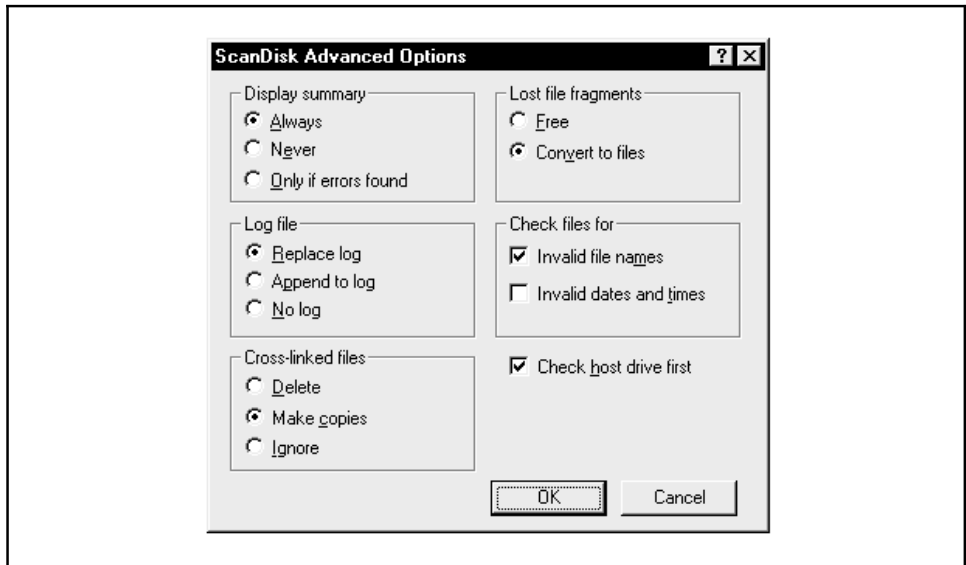
ScanDisk Advanced Options

If you click the Advanced button in the ScanDisk main window (see Figure 24-7), you see the Advanced Options dialog box shown in Figure 24-8. This is where you specify how you want ScanDisk to handle various errors and display error information.

- ⇒ **Display summary** The summary information provides statistics about the drive after the error check. Click Always to display summary information, Never to keep summary information from being displayed, or the “Only if errors found” option to display summary information if errors are found on the drive.
- ⇒ **Log file** Click Replace log to create a new log file that contains the statistical summary information, or choose Append to log if you want to add summary information to an existing log file. Click No log if you don’t want to create a summary file.
- ⇒ **Cross-linked files** Cross-linked files are two files that are using the same storage areas on a disk. Cross-linking can occur during power outages or application errors. Set the options in this field based on how you want ScanDisk to handle cross-linked files. If two files are cross-linked, the information is only good for one of the files, so you should normally choose Make copies so you can look at the files and decide what to do with them after ScanDisk makes copies. Choose Delete if you know that the contents of the cross-linked files are not important or you can restore the files from a backup set instead of trying to recover

ScanDisk
advanced
options

Figure 24-8.



them from disk. Choose Ignore to bypass the problem and deal with it later. But you should correct the problem as soon as possible to prevent further system degradation.

- ⇒ **Lost-file fragments** In most cases, lost-file fragments are remnants of files that were not properly removed from disk. You can usually delete them to free up space on disk. Choose Convert to files if you think the fragments might contain useful data. The fragments are converted to files in the top-level folder and assigned the names FILE0000, FILE0001, FILE0002, and so on. You can then look at these files to see if you want to keep them.
- ⇒ **Check files for** Always enable the Invalid filenames option to check for files that are improperly named, although you might not be able to open such files. If you can't open them, you'll need to recover the files from backup or delete them if they are unimportant.
- ⇒ **Check host drive first** When this option is enabled, ScanDisk checks the host drive of a compressed drive before checking the compressed drive itself. This way, you can be sure that the host drive does not contain errors that might be appearing as errors in the compressed drive. Always enable this option.

Running ScanDisk Every Time You Startup Windows 95

Microsoft recommends running ScanDisk every time you start Windows 95. One way to scan the disk every time Windows 95 starts is to put the ScanDisk program in the Startup folder. Here's how:

1. Click the Start button, then choose Settings and Taskbar.
2. Click the Start Menu Programs tab on the Taskbar Properties dialog box.
3. Click the Add button so you can customize the Start menu. The Create Shortcut dialog box appears.
4. In the Command line field, type **scandisk**, then click the Next button.
5. Scan down the list, then click the Startup folder and click the Next button.
6. Click the Finish button.

The next time your system restarts or you restart Windows 95, the ScanDisk utility loads automatically so you can scan the disk.

Defragmenting the Files on Your Drives

A fragmented file is not stored in one contiguous area of a disk. It is broken into parts and stored in several different areas. Suppose someone asked you to get a file out of a filing cabinet, but each page of the file was stored in a different folder. It would take a while to retrieve the entire file. Likewise, your hard drive has to work harder to retrieve fragmented files and so performance drops. Files get fragmented over time as you delete files and store new files.

The Windows 95 Disk Defragmenter can help alleviate disk fragmentation problems. It moves and shuffles files around on the hard drive until all the parts of a file are stored next to each other. This improves disk performance. You need to run the Disk Defragmenter on a regular basis. Once a month is recommended, but if you delete a lot of files, you should run it more often.



Tip: It's a good idea to periodically clean up your system by removing unused files and archiving them to floppy disks. You might also reorganize your system by moving entire folders from one place to another or from one drive to another. Run the Disk Defragmenter after any activity that removes a lot of files—you'll regain performance.

The disk defragmentation process temporarily moves files to unused disk locations. Once all the file fragments are gathered, the file is moved to a contiguous area near the leading edge of the disk. Eventually, all the files are stored in an optimal, nonfragmented configuration.

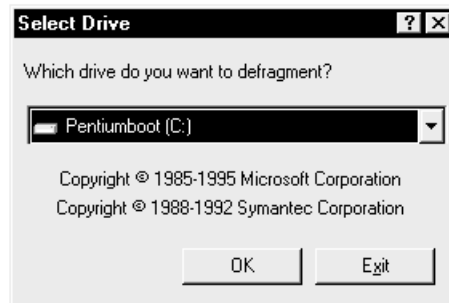
The Disk Defragmenter performs all of this disk activity in a safe way. As files are shuffled around, they are completely written to disk before being erased in their original location. This way, data is not lost if the computer

inadvertently shuts down. In fact, you can interrupt the process and start over again later if you need to.

You can start the Disk Defragmenter by using one of these techniques:

- ⇒ Right-click a disk drive object in the My Computer window, then choose Properties. Click the Tools tab on the Properties dialog box, then click Defragment Now.
- ⇒ Click the Start button, then Programs, Accessories, and System Tools. Choose Disk Defragmenter from the menu.

If you choose the first technique, the defragmentation process starts immediately on the drive you selected. If you choose the second option, the following dialog box appears:



Click the down-arrow button to choose a drive to defragment, then click the OK button. With either method, you see a dialog box similar to the following. It might tell you, as this dialog box does, that the drive does not require defragmenting:



You can do one of the following:

- ⇒ Click Start to defragment the drive anyway.

- ⇒ Click Select Drive to choose a different drive to defragment.
- ⇒ Click Advanced to change the defragmenting options, as described below.
- ⇒ Click Exit to quit Disk Defragmenter.

Disk Defragmenting Options

If you click the Advanced button, you see a dialog box similar to the one shown in Figure 24-9, where you can change the options for defragmenting the disk. The first three options provide you with a way to trade off the amount of time it takes to defragment against the quality of the defragmentation process. Your options are:

- ⇒ **Full defragmentation** Performs an optimized defragmentation that places all files in a contiguous state at the beginning of the disk and consolidates all free space all the way to the end of the disk.
- ⇒ **Defragment files only** Puts fragmented files side by side, but stores the files wherever free space is available. No attempt is made to consolidate free space. Use this method if you are in a hurry and you want to gain some immediate performance benefits. You should run a full defragmentation as soon as possible.
- ⇒ **Consolidate free space only** This option consolidates free space, which reduces future fragmentation. However, existing files are fragmented even more to fill up the free spaces at the beginning of the



Disk
Defragmenter
options
Figure 24-9.

disk. You should run a full defragmentation as soon as you have time to do it.

- ⇒ **Check drive for errors** Enable this option to check for errors on the drive before defragmenting begins.
- ⇒ **This time only. Next time, use the defaults again** Check this option if you only want to use the settings on this dialog box for this defragmentation session.
- ⇒ **Save these options and use them every time** Check this box to use these defragmentation settings in every session.

After setting options, click the OK button to return to the Disk Defragmenter dialog box, then click the Start button to begin the defragmentation process. When the disk defragmentation is complete, you can select another drive or exit.

This chapter covers installing, configuring, and running applications in Windows 95. You can run all your applications in Windows 95, including applications written for Windows 3.1 and DOS. “Working with DOS Programs,” later in this chapter, outlines techniques for running and configuring DOS programs to work under Windows 95.



Note: Microsoft recommends upgrading all of your applications to new versions that carry the “Designed for Windows 95” logo.

Windows 95 includes a new Add/Remove Programs utility in the Control Panel that makes it easy to install and uninstall programs. The utility simplifies the installation of Windows 3.1 applications by automatically updating the Registry (a system-wide information storage area). The Add/Remove Programs utility also includes an uninstall feature that helps you remove Windows 95 applications from your system. In previous versions of Windows, this information was stored in .INI files.

About the Registry

The Registry is a central storage facility that Windows 95 uses to store configuration information for users, applications, and the operating system itself. The Windows 95 Registry provides a unique centralized location where the operating system and applications can store and access configuration information. The Registry is hidden during normal operation and most users don’t need to view it or make changes to it. I only mention it because you’re likely to see references to it as you work with Windows 95. It exists as several .DAT files that contain system-specific information (SYSTEM.DAT) or user-specific information (USER.DAT).

Previous versions of Windows used .INI (initialization) files. Because many programs created their own .INI files, it was easy to end up with a cluttered set of configuration files. Windows 95 recognizes .INI files because they are still required by older applications that make changes to SYSTEM.INI and WIN.INI, and create their own .INI files in the WINDOWS directory.

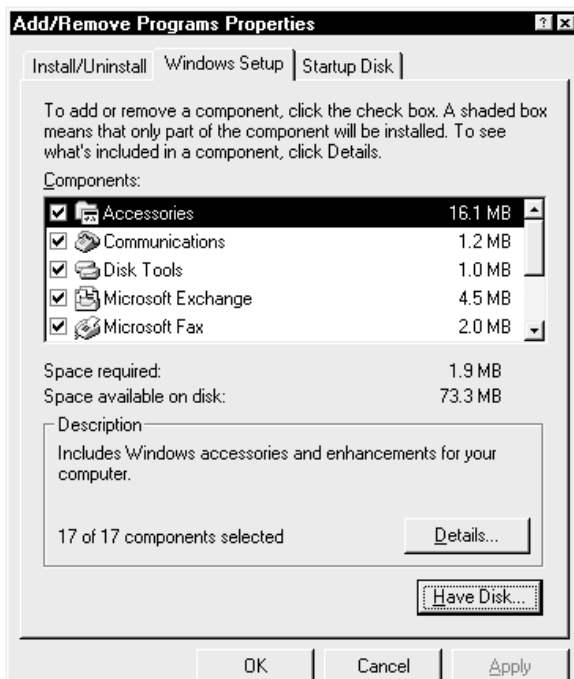
Installing and Removing Windows Components

You use the Add/Remove Programs utility to install Windows 95 components and accessories. If you didn't install a utility like the Backup program or Microsoft Exchange while installing Windows 95, you can use Add/Remove Programs to install the programs at a later time. Add/Remove Programs also lets you remove any accessory or program that you no longer use so you can free up space on your hard drive.



Note: This section assumes you originally installed Windows 95 from CD-ROM. If you installed Windows 95 from floppy disk, refer to the next section, "Installing Additional Windows 95 Components from Floppy Disk" for information on installing additional components.

To add or remove programs, open the Control Panel, double-click Add/Remove Programs, then click the Windows Setup tab to display the dialog box shown in Figure 25-1.



The Windows Setup page of the Add/Remove Programs utility

Figure 25-1.

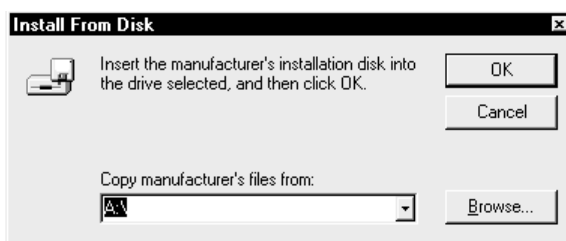
Groups of applications are listed in the window with a checkmark indicating that the entire group is installed. If you see a checkmark in a “darkened” box (rather than a white box), that means that only some of the components are installed. Click the Details button to see a complete list of components for a selected group.

Click the OK button after selecting the items you want to add or remove. The utility then installs or removes the selected items.

Installing Additional Windows 95 Components from Floppy Disk

If you installed Windows 95 from floppy disk, you can install additional components from the Supplemental disk set by following these steps:

1. Place Supplemental Disk 1 in the floppy drive and click the Have Disk button. You’ll see the following dialog box:



2. Type the letter of the drive where you placed the floppy disk and press OK. You’ll see a list (similar to the one shown in Figure 25-2) of the components that you can install.
3. Click the checkbox next to a component to see a description and mark it for installation.
4. Once you have marked all the components that you want to install click the Install button and follow the onscreen instructions.

Installing and Removing Applications

You use the Add/Remove Programs utility in the Control Panel to install or remove both applications designed to run under Windows 95 and applications designed to run under previous versions of Windows or DOS. The advantage of using the Add/Remove Programs utility is that Windows 95 maintains control over the installation process. It makes proper entries into the Registry (which Windows 3.x applications don’t know how to do), and it

Additional components to install from the Windows 95 Supplemental disk set

Figure 25-2.

Components:		
<input type="checkbox"/>	Accessibility Options	0.3 MB
<input type="checkbox"/>	Character Map	0.1 MB
<input type="checkbox"/>	CompuServe Mail Services	0.7 MB
<input type="checkbox"/>	Curves and Colors	0.1 MB
<input type="checkbox"/>	Desktop Wallpaper	0.1 MB
<input type="checkbox"/>	Flying Through Space	0.1 MB
<input type="checkbox"/>	Games	0.7 MB
<input type="checkbox"/>	Microsoft Fax	0.0 MB
<input type="checkbox"/>	Mouse Pointers	0.4 MB
<input type="checkbox"/>	Multi-Language Support	2.2 MB
<input type="checkbox"/>	Mystify Your Mind	0.1 MB
<input type="checkbox"/>	Net Watcher	0.1 MB
<input type="checkbox"/>	Quick View, extra	0.3 MB
<input type="checkbox"/>	System Monitor	0.1 MB

ensures that older applications don't copy over important Windows files without a possibility of recovering.



Note: If you install Windows 95 in your Windows 3.1 directory, the setup program automatically locates and configures Windows 3.1 and DOS applications.

You also can use Add/Remove Programs to install DOS programs. During installation, you can choose an icon to represent the application. In addition, a Program Information File (PIF) is created that contains information about how the program should run under Windows 95. The PIF is created for your application by extracting information from a file called APPS.INF, but if APPS.INF does not contain information for your application, default settings are used.



Note: You might need to manually change the program's settings to get it to run properly, as discussed later in the "DOS Program Properties" section.

When you open the Add/Remove Programs utility, you see options for both installing and removing programs. The installation routine runs a wizard

that guides you through the installation process, which you'll see next. To remove programs, refer to "Uninstalling Applications" later in this section.

Running the Application Installation Wizard

To install Windows 95, Windows 3.x, and DOS applications, start the Add/Remove Programs utility in the Control Panel, then click the Install button on the Install/Uninstall page.

You're asked to insert the installation disk or CD-ROM for the application you are installing in an appropriate drive. When you click the Next button, the installation program locates the drive that has a setup or installation program.

When installation is complete, click the Start button, then choose Programs to view the new group for the program. You'll see a folder icon next to the program's name. Click the folder to see the newly installed programs.

Recovering Overwritten Files After an Install

When installing Windows 3.x programs, some Windows 95 files might be overwritten by older Windows 3.x components. Windows 95 can help you recover the files if you follow these steps:

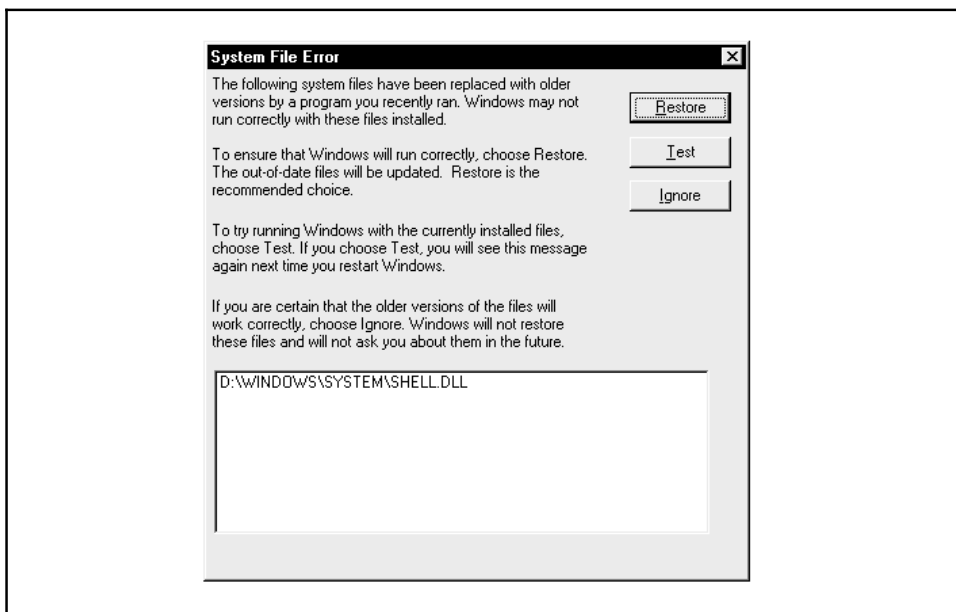
1. After installing any Windows 3.x program, restart Windows 95.
2. If Windows 95 components were overwritten, you'll see the System File Error dialog box shown in Figure 25-3, which lists the overwritten files. Click the Restore button to restore these components.
3. Try running the application you just installed. If it doesn't run properly with the Windows 95 components, contact the manufacturer for updated files or a new Windows 95-compliant version.

Uninstalling Applications

Some applications written specifically for Windows 95 support the uninstall feature available in the Add/Remove Programs utility. When you start the utility, you'll see a list of previously installed programs that you can uninstall. Applications not installed with Add/Remove Programs do not appear on the list. Click the checkbox for the program you want to uninstall and click the Remove button.

Uninstall removes the reference for the program from the Registry and deletes any files associated with the program from your hard disk. If files are being used by other programs, they are not deleted.

The System
File Error
dialog box
Figure 25-3.

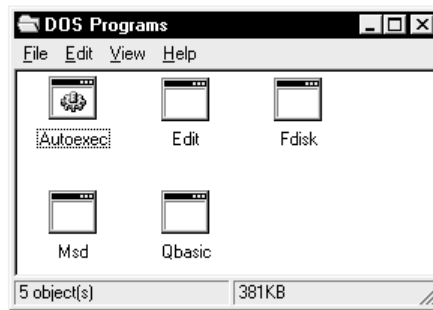


Working with DOS Programs

There are a number of advantages to running DOS-based applications under Windows 95. Support for DOS applications has been enhanced in the following ways:

- ⇒ DOS applications have better access to computer resources you've installed for Windows, such as multimedia video and sound devices.
- ⇒ More conventional memory is available to DOS applications under Windows 95 because it uses system components like mouse, network, and CD-ROM drivers that have lower overhead.
- ⇒ Windows 95 provides better support for DOS programs that use graphic modes, allowing them to run in a window.
- ⇒ You can use scalable TrueType fonts in DOS windows.
- ⇒ You can run batch files for individual DOS sessions.

When you open a drive window or folder window to view your DOS applications, they appear as icons similar to the ones pictured in the following illustration:



The object with the gear is a batch file and the other objects are .EXE or .COM files.

Here are different ways you can start DOS programs:

- ⇒ Double-click a DOS program object if you see it visible in a window such as the one shown in the previous illustration.
- ⇒ Open the MS-DOS Prompt window, then start your program by typing its name on the command line. To open the MS-DOS Prompt window, click the Start button, then choose Programs and MS-DOS Prompt.
- ⇒ Open the Run dialog box (click the Start button and choose Run) and type the name of the DOS program. You might need to specify the drive and path where the program is located.



Note: You can boot your computer directly into DOS without loading Windows 95. Press the F8 key when you see the message "Loading Windows 95" during the startup process. Once you're done with DOS, you can start Windows 95 from DOS by typing **WIN**.

DOS applications will run in a window or full screen. Press ALT-ENTER to switch between the modes. In addition, you can run DOS applications in the background or exclusively in the foreground. When DOS programs run exclusively in the foreground, Windows applications and other DOS applications are temporarily suspended.

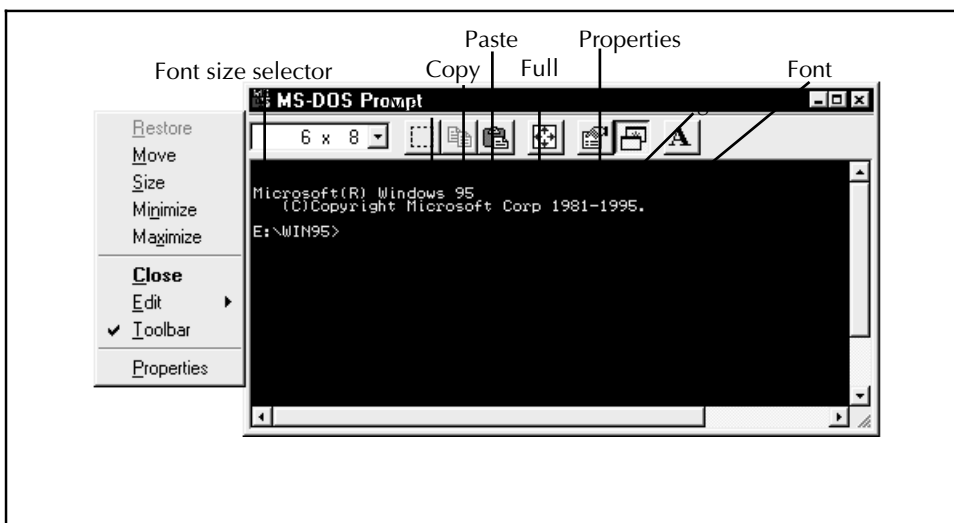
A folder called DOS exists on your system that contains a whole collection of DOS programs. In most cases, you don't need to use these utilities because Windows 95 provides similar command and functions from its interface. However, if you prefer using DOS commands, you can start the MS-DOS Prompt and execute commands at the command prompt as discussed next.

The DOS Prompt Revisited

If you read Chapter 4, you already know about the MS-DOS Prompt. You can refer to the section “Running DOS Applications” in that chapter for a review. The MS-DOS Prompt opens a window similar to the one shown in Figure 25-4, where you can execute DOS commands and start DOS programs. To start the MS-DOS Prompt, click the Start button, then Programs, then choose MS-DOS Prompt.

The toolbar contains options for changing the size of the font, marking, copying, and pasting text, and changing other properties of the window. Chapter 4 describes each of these buttons.

When you run DOS programs, the same window pictured in Figure 25-4 surrounds the program. You can resize the window, change its font, and change other settings on-the-fly while the program is running, or you can set various properties in advance so they are always used when you start the program. These properties are discussed next.



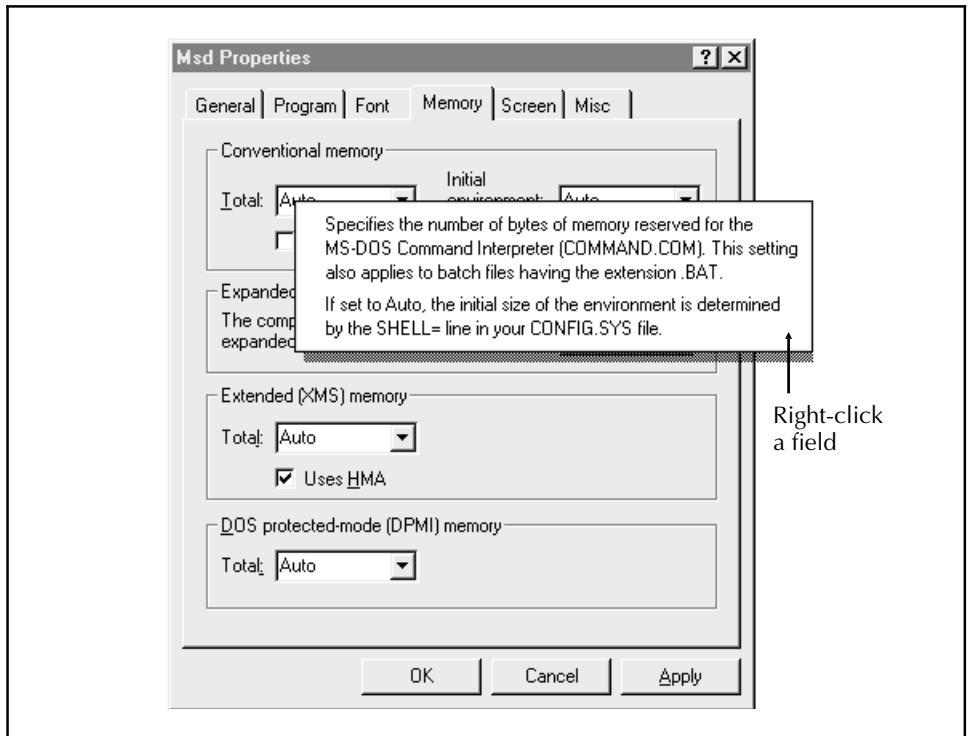
The MS-DOS Prompt
Figure 25-4.

DOS Program Properties

You can change the properties of DOS programs to customize how the program runs or how it appears on your screen. You can also change properties for programs that don't run properly under Windows. When you change the properties of a DOS program, Windows creates special program information files (PIFs) to hold the new settings. Windows 95 already has appropriate settings for the most popular DOS programs; these settings are contained in a file called APPS.INF. Windows 95 checks this file before running a program to obtain default settings, but if you want to change settings for any reason, you can edit the properties of the program. You can also automatically set up PIFs for DOS programs by running the Add/Remove Programs utility in the Control Panel (as discussed

The Properties dialog box for DOS programs, with the "What's This" pop-up box visible

Figure 25-5.



earlier), assuming the APPS.INF file has information about the program you are trying to install.

To change a DOS program's properties, just right-click the program object and choose Properties to see a Properties dialog box similar to the one shown in Figure 25-5. You can get help for any property option by right-clicking the option. You'll see a "What's This" pop-up box appear. Left-click "What's This" to see a description in a pop-up window like the one in Figure 25-5.

Here are some of the changes you can make to customize DOS program's properties.

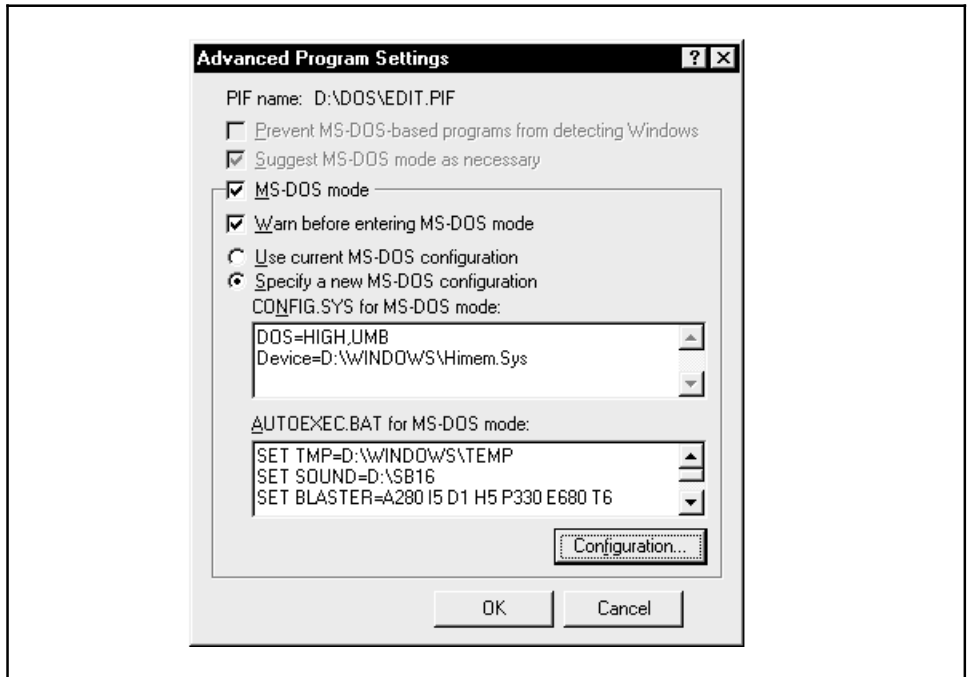
- ⇒ You can change the location of the program and specify the name of a batch file that you want to run with the program.
- ⇒ You can specify the type of window you want to start the applications in, either maximized, minimized, or normal. You also can run the program full-screen, rather than in a window.
- ⇒ You can specify that you want the application to run exclusively (all other Windows and DOS applications are suspended).
- ⇒ You can change the font that appears when the program runs in a window, or the number of text lines that appear when the program runs full-screen.
- ⇒ You can change memory settings, like the amount of conventional memory and extended memory to set aside for the application.

If you can't get a DOS program to work at all, you might need to enable one of these settings:

- ⇒ **Exclusive MS-DOS Mode** This mode provides an environment for running a DOS application by itself. When you run a program in this mode, Windows 95 removes itself from memory (except for a small "stub") and provides the DOS-based program with full access to all the resources of your computer. You only need to use this feature for DOS programs that don't run properly under Windows. Refer to "Running Exclusive MS-DOS Mode" later in this chapter for more information.
- ⇒ **Custom MS-DOS Environments and Batch Files** Each DOS

Run a DOS program in exclusive mode by setting the advanced program settings

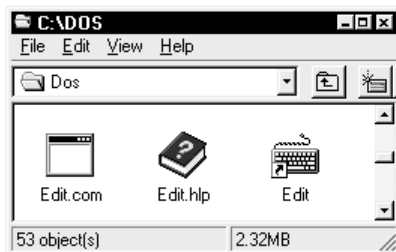
Figure 25-6.



program you start in Windows 95 can have its own custom environment (unlike previous versions of Windows). That means you can create a special AUTOEXEC.BAT or other batch file to start TSR (terminate-and-stay-resident) programs and set environment variables as necessary for the program. To specify batch files, open the Properties dialog box for the program, then click the Program tab and type the name of the batch file in the Batch file field.

In previous versions of Windows, you changed DOS program properties by editing a PIF file with a special PIF Editor program. In Windows 95, you edit properties on the Properties dialog box for each individual program, as shown in Figure 25-6.

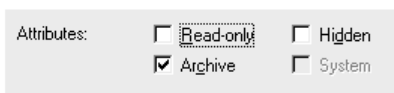
When you change the properties of any existing program, Windows 95 create a separate PIF file for it in the same folder. A PIF icon looks like the icon shown on the right side of the window in the following illustration:



Note: Once a PIF file is created for a DOS program, you can edit the properties of the PIF or the original program. The properties of both objects are automatically updated because they are interrelated objects.

The next few sections explain each page of the Properties dialog box shown in Figure 25-12 and some of the options on those pages. Remember, to get a full description of each option on a page, right-click the checkbox, button, or text field for the option.

The General Tab The General tab contains information about your program, such as its name, creation date, and date last modified and accessed. You can change the attributes of a file in the Attributes field, shown here:



The Program Tab The Program tab is where you can change the program icon name, the startup command for the program, the working directory where the program stores files by default, and the name of a batch file that runs whenever you start the program. You also can set advanced options for running the program in DOS Mode, as described later under “Running Exclusive MS-DOS Mode.”

The Font Tab Click the Font tab to set the size of the font in the window, and consequently the default size of the window itself.

The Memory Tab Click the Memory tab to set the size of conventional memory, expanded (EMS) memory, extended (XMS) memory, and DOS Protected-mode (DPMI) memory.

The Screen Tab Click the Screen tab to set whether the program runs in a window or full screen and whether the toolbar is displayed (in window mode). You also can set some performance options on this tab.

The Misc Tab The Misc tab contains a number of options for customizing the program. For example, you can specify that you want the program to stop if it is in a background window (you are working in another window). For more information on these options, click the question mark button, then click over an option.

Running Exclusive MS-DOS Mode

When DOS programs do not run properly under Windows 95, you can set the advanced program options to run the program in DOS Mode. In this mode, Windows 95 removes itself from memory and provides the DOS program with full access to all the resources of the computer. To access advanced settings, follow these steps:

1. Right-click the startup object for the program and choose Properties from its context menu.
2. Click the Program tab, then click the Advanced button to display the Advanced Program Settings dialog box shown previously in Figure 25-6.



Note: Click the MS-DOS mode checkbox to enable the lower options on the dialog box.

The following options are now relevant:

- ⇒ **Warn before entering MS-DOS mode** Make sure this box is checked if you want to display a warning that all other programs will be closed before this program starts.
- ⇒ **Specify a new MS-DOS configuration** If you click this checkbox, you can enter new startup parameters for the CONFIG.SYS and AUTOEXEC.BAT files. Simply click in either of the two lower windows and add commands or edit the ones that are there. Refer to your program's documentation for information about setting these options.

Click the Configuration button to display the Select MS-DOS Mode Configuration Options dialog box. This dialog box lets you specify additional startup parameters. To see a description of each item, click its name (not its checkbox). To enable an item, click its checkbox. When you're

finished, click the OK button, then click OK on the Advanced Program Settings dialog box and close the Properties dialog box.

If your computer is attached to a network, you can allow other users to access resources on your computer and you can access shared resources on other computers. You can also access resources on dedicated servers such as Windows NT Server and Novell NetWare servers or use those servers to verify other users before they access your computer.

This chapter discusses the security features in Windows 95. Often, security is managed by a network administrator, so if your computer is already connected to a network, some of the tasks here may be taken care of for you. However, if you decide to build a simple network in your office that connects a few machines, you'll need to know something about security features if you want to keep other people out of the payroll files or your personal folders. This chapter also describes how anyone who shares folders can control the users and access methods to those folders.

Logging on to a Windows 95 computer provides a way to implement two important Windows 95 features:

- ⇒ **User Profiles** If more than one person is using a computer, Windows 95 allows each user to create custom desktop arrangements that appear when the user enters their correct logon information. See "User Profiles" later in this chapter for more information.
- ⇒ **Unified Logon** Windows 95 lets you log on to many different network resources using the password you type at logon, rather than having to type a password every time you try to access a resource.

Don't assume that Windows 95 protects the files on your computer with its password security scheme. Windows 95 implements a network-based security scheme that can prevent a user from accessing your files over a network, but if someone is at your physical computer, they can simply reboot the computer to bypass any local security schemes. If you need advanced workstation security, Microsoft recommends Windows NT. Alternatively, you can lock your computer with its key when you're away.

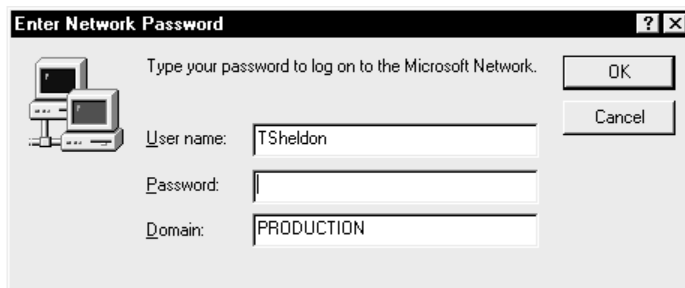


Note: To learn more about implementing network-based security, refer to the Osborne/McGraw-Hill publication, *LAN Times Guide to Networking Windows 95*, by Shimmin and Harper.

Managing Security

Windows 95 can provide a unified logon to the resources of your organization's network. Basically, Windows 95 will save the passwords entered when a user logs on, then use those same passwords when the user logs on to other computers or resources on the network. With a unified logon, users only need to log on once to gain access to most of their network.

Windows 95 can validate a user's login by checking a list of authorized users on a Microsoft Windows NT server or a Novell NetWare server. This is called *pass-through security*. For example, if you are connected to a Windows NT server that provides pass-through security, you see the following dialog box when you log on:



The domain of the Windows NT server you normally log on to is listed at the bottom, although you can type another domain if necessary. When you type your password and press OK, the user name and password are sent to the Windows NT server and verified against the access security list on that computer. If it matches a name in the list, you are authorized to use resources on the network based on the access privileges.

Two Types of Security

The Network Neighborhood is your window to the network. When you open it, you see a list of computers attached to the network. Double-click the icon of any computer that appears in the window to see a list of resources available on that computer.



Note: You will see only folders and printers that have been specifically shared on a computer. You can't access other nonshared folders while working on a network computer.

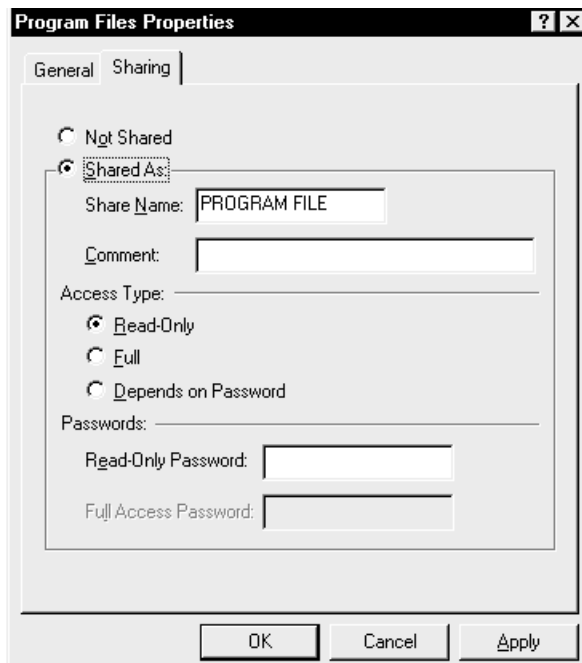
When file and printer sharing is enabled on your computer, Windows 95 provides two types of security:

- ⇒ **Share-level security** Access passwords are stored on your computer and other people must type the password to use resources on it.
- ⇒ **User-level security** Access to your computer is managed by a special security server (Windows NT Server or Novell NetWare server).

User-level security is normally implemented in larger network installations that have Windows NT or NetWare servers in place and require full-time network administrators.

Share-Level Security

Share-level security is the simplest security scheme to implement. Right-click the folder to share and choose Sharing to open the dialog box in Figure 26-1.



The Program Files Properties dialog box
Figure 26-1.

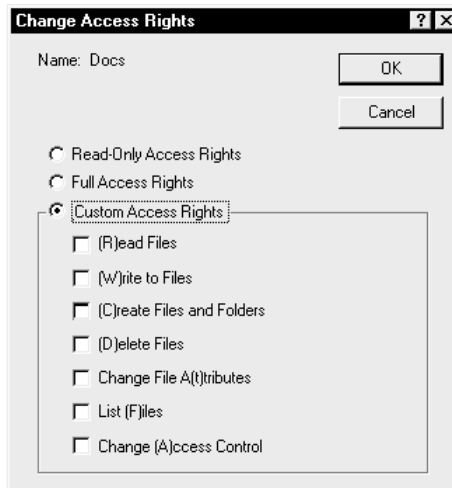
You specify the password that users must type to access the shared resource, and your Windows 95 computer handles all of the security verification.

Any computer user can implement a password security scheme on their system by assigning read-only or full-access passwords to folders. They then give the passwords only to the people they want to access the folders.

Remember, other users can see only those folders on your computer that have been specifically shared. Other folders are not visible. However, if you share a folder that has its own “subfolders,” those folders will be available to other users. Therefore, never share a hard drive unless you want others to have access to every folder on it. Share only the specific folders that you want other users to access.

User-Level Security

The user-level security scheme validates users on a security server. When you share a folder, a list of users or groups from the security server appears. Pick a user name or group, then choose the type of access in a box similar to Figure 26-2.



The Change Access Rights dialog box
Figure 26-2.

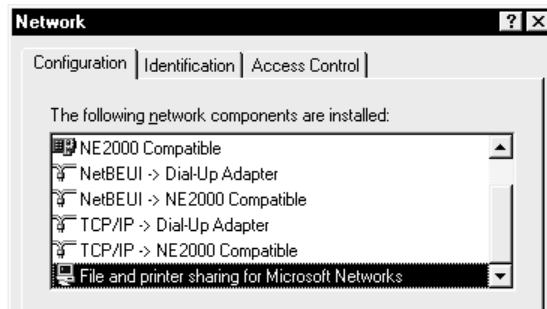
Microsoft's recommendation for rights based on the file operations that users will need to perform in a folder are as follows:

File Operation	Required Permissions
Read from a closed file	Read files
See a filename	List files
Search a directory for files	List files
Write to a closed file	Write, create, delete, change file attributes
Run an executable file	Read, list files
Create and write to a file	Create files
Copy files from a directory	Read, list files
Copy files to a directory	Write, create, list files
Make a new directory	Create files
Delete a file	Delete files
Remove a directory	Delete files
Change directory or file attributes	Change file attributes
Rename a file or directory	Change file attributes

Enabling Sharing Services

Now that you understand the different types of resource sharing on a Windows 95 network, you're ready to enable sharing services and share folders and printers on your computer.

First, check to see if file and printer sharing services are enabled on your computer. Open the Networks utility in the Control Panel, then scan down the list in the window to see if you have an option called "File and printer sharing for Microsoft Networks," as shown in this illustration, or "File and printer sharing for NetWare Networks." If you do, file and printer sharing is enabled.



If file and printer sharing is not enabled, follow these steps to install support for Microsoft, Novell, or other sharing schemes.

1. Click the Add button
2. Click Service, then click the Add button on the corresponding dialog box.
3. Choose Microsoft (or other provider) in the Manufacturers list.
4. Choose one of the file and printer sharing options on the right and click OK.

Specifying Share-Level or User-Level Sharing

Now you can enable Share-level or User-level access control. Click the Access Control tab on the Network dialog box to display the page shown in Figure 26-3.

- ⇒ Click the “Share-level access control” option to enable the local password security scheme.
- ⇒ Click the “User-level access control” option to enable pass-through security. You must type in the name of the security server in the lower field.

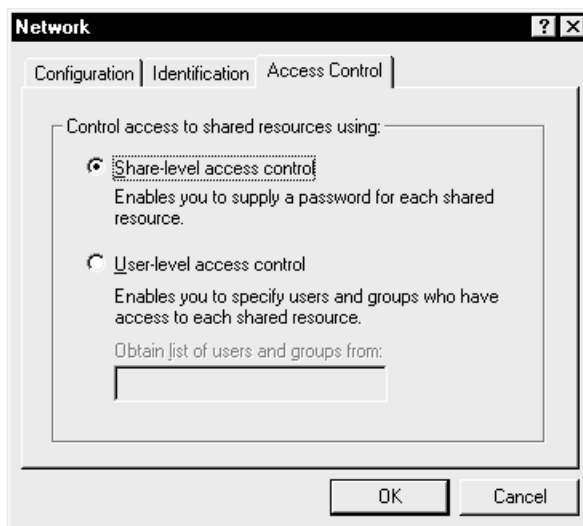
Sharing Folders in a Share-Level Environment

Once file sharing is enabled and you have selected the share-level or user-level access method, you are ready to begin sharing folders.

Follow these steps to share folders in a share-level environment:

1. Right-click the folder, then choose Sharing from the context menu.
2. On the dialog box, click the Shared As button. A sharing dialog box similar to the one shown in Figure 26-1 appears.
3. Type a share name or use the default name provided.

Specifying the type of access control for your computer
Figure 26-3.



4. Select one of the following options based on the type of security you want to provide:
 - To share a folder with read-only access, click the Read-Only button, then type a password in the Read-Only Password field.
 - To share a folder with full access, click the Full button, then type a password in the Full Access Password field.
 - To use both types of security, check both the Read-Only and Full buttons, then type a password in both password fields.
5. Give the read-only password to people who need to be able to read or copy files in the folder and give the full password to people whom you trust to change files.

Sharing Folders in a User-Level Environment

To share folders in a user-level environment, follow these steps to assign access rights to individual users or groups of users on your network.

1. Start by right-clicking the folder you want to share and choose Sharing from the context menu.

2. Next, click the Add button to open the Add Users dialog box, then choose the user or group of users to which you want to assign rights to access this folder.
3. Finally, click the Custom button to display the Change Access Rights dialog box, as shown in Figure 26-2.

Click one of the three top buttons to assign either read-only, full, or custom access rights. If you click Custom Access Rights, you can grant one or more of the rights listed in the dialog box. See Table 26-1 for a description of rights you should assign based on the type of file operations you want to grant to the user or group.

Managing User Access Rights

In a user-level sharing environment, the security server provides a list of users and groups on your network to whom you can grant access to your computer's resources. A network administrator usually adds and deletes users and groups on the security server. You can't change the user list but you can select names from it when assigning access rights.

One other thing you can do is get a list of users who have access to a folder on your computer. Recall that you assign user-level access rights on an individual basis. One day, you might grant rights to two users, then the next day you might assign rights to two more users. Eventually, you may lose track of which users have access rights to a specific folder.

To view a list of users who have access rights, right-click the folder in question, then choose Properties and click the Sharing tab. The dialog box lists the names of users and groups that have access to the folder. You can do one of the following:

- ⇒ Click Add to add a new user or group.
- ⇒ Click a user or group name, then click Remove to remove the name from the access list.
- ⇒ Click a user or group name, then click Edit to change access rights.

Changing Your Logon Password

When you start Windows 95, you're asked to enter a user name and password. You can change your password on a regular basis for security reasons or change your password to match the passwords you type to access other resources on your network.

This last option is especially useful in Windows 95 because it remembers your passwords during the current session and from session to session. Then

when you try to access a resource that requires a password, you don't need to type the password again because Windows 95 will use the password you already specified.

1. To change passwords, double-click the Passwords utility in the Control Panel. The Passwords Properties dialog box appears.
2. Click the Change Windows Password button to change the logon password for your Windows 95 computer and for other resources you log on to.
3. Click any options in the list that you want to have the same password as your new Windows 95 logon password, then click OK. The Change Windows Password dialog box appears.
4. Type the old password, then type the new password in the two lower boxes and click OK.

User Profiles

User profiles let multiple users at a single computer maintain their own desktop settings, applications settings, preferences, and network settings. When a user logs on and enters the correct name and password combination, Windows 95 loads the settings that were in use the last time that user logged on. When another user logs on to the same computer later, the system loads their personal preferences after receiving a correct logon name and password.

This section assumes that you are implementing user profiles on your computer so that other people can use it. In a sense, you then become the system administrator for the computer and the person who will implement the user profile policies. In fact, very little work is required with user profiles: you simply enable the feature and let Windows 95 keep track of each user and their special settings.

However, Windows 95 does provide an advanced set of capabilities called *system policies* that let system or network managers restrict what a user can do on a system. A typical restriction might prevent a user from accessing the Control Panel or from changing the desktop. Restrictions help you prevent novice users from accessing features they are not properly trained to use or accidentally causing system problems that you might need to correct with a visit to their system. Refer to "System Policies" later in this chapter for more information.

The primary purpose of user profiles is to let individual users of the same computer customize the computer for their own use. Each user can customize the following:

- ⇒ Control Panel settings and preferences such as the desktop layout, background colors or patterns, and font selections.
- ⇒ Shortcuts on the desktop.
- ⇒ Start menu options.
- ⇒ Network settings that display folder or printer objects for resources on other network computers.
- ⇒ The settings of Windows 95 applications, such as their menu, toolbar, fonts, and other configurations.



Note: Some information is also retained from one session to another, such as recently opened documents or information that was typed in the fields of dialog boxes.

Implementing User Profiles

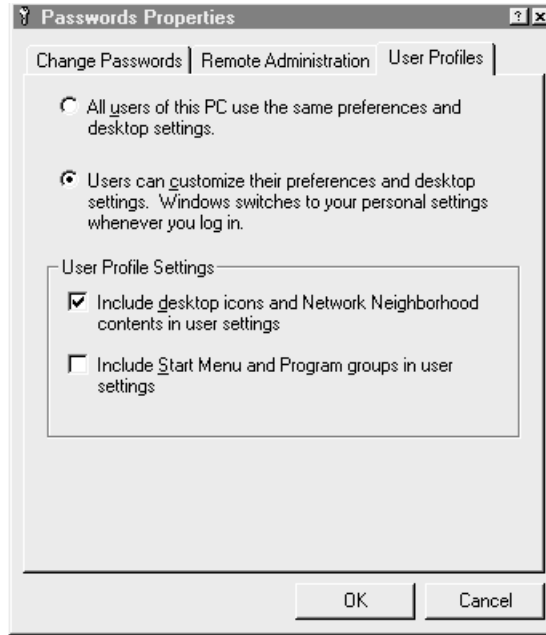
To implement user profiles, you simply enable the option, then let each user log on to the computer. When a new user logs on and types a logon name and password, Windows 95 immediately creates a new user profile and a folder with the user's name that will include the information to define the user's logon settings. The folder is created in the PROFILES folder, which itself is inside the WINDOWS folder.

To enable user profiles on an individual computer, follow these steps:

1. Open the Control Panel and double-click the Passwords dialog box.
2. Click the User Profiles tab to display the dialog box shown in Figure 26-4.
3. Click the second option which enables users to customize their preferences and desktop settings.
4. Click one or both of the checkboxes in the User Profile Settings field.

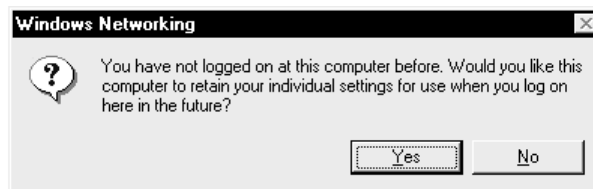
After making changes to the dialog box, click the OK button, then shut down your computer and restart it to make the changes effective.

The User Profiles tab on the Passwords Properties dialog box
Figure 26-4.



Note: To accommodate users who travel from one network location to another, user profiles can be copied to a user's network directory. Then when the user logs on to the network at another site, the user profile settings are used to set up the user's custom desktop.

The next time a new user logs on to the system, types their user name and password in the standard logon dialog box, and clicks OK, Windows 95 displays this message:



This message indicates that the computer can save individual settings for future use. The new user should click Yes.

System Policies

System Policies provide you or network administrators with a way to restrict and control access to Windows 95 and individual computers. The Windows 95 System Policy Editor is the tool that system administrators use to control the following options:

- ⇒ **Control Panel** System policies can prevent users from accessing the Display, Networks, Printers, System, and Security utilities in the Control Panel.
- ⇒ **Desktop** System policies can prevent users from modifying their desktop, including restricting users from changing the desktop wallpaper and color scheme.
- ⇒ **Network** System policies can prevent users from changing network settings.
- ⇒ **Shell** With the System Policy Editor, the administrator can customize a user's Programs folder, desktop items, Startup folder, Network Neighborhood, and Start menu and prevent the user from changing these settings. The administrator also uses this option to perform these tasks:
 - ⇒ Remove the Run and Find command from the Start menu.
 - ⇒ Remove the Taskbar option from the Start-Settings menu.
 - ⇒ Hide drives in the My Computer window.
 - ⇒ Hide the Network Neighborhood or hide the Entire Network from the Network Neighborhood window.
 - ⇒ Hide any or all items on the desktop.
 - ⇒ Disable the Shut Down command to prevent any changes made during a session from being saved.
- ⇒ **System** System policies can restrict users to running only designated Windows and MS-DOS applications.

The System Policy Editor is discussed in detail in the Microsoft Windows 95 Resource Kit, which is available from Microsoft.

This chapter covers tools and techniques you can use to monitor your system, optimize its performance, and perform rudimentary troubleshooting.

The System Monitor

The Windows 95 System Monitor tracks the performance of various system components and helps you determine the cause of problems. The System Monitor provides real-time information about the performance of your system in the form of line charts, bar charts, or numeric information. You can compare this data with information from previous performance records or with information from other computers that serve as benchmarks.



Note: The System Monitor utility may not have been installed when Windows 95 was installed. Use the Add/Remove Programs utility in the Control Panel to install it. Refer to “Installing and Removing Windows Components” in Chapter 25 for details.

The System Monitor can help you perform all these tasks:

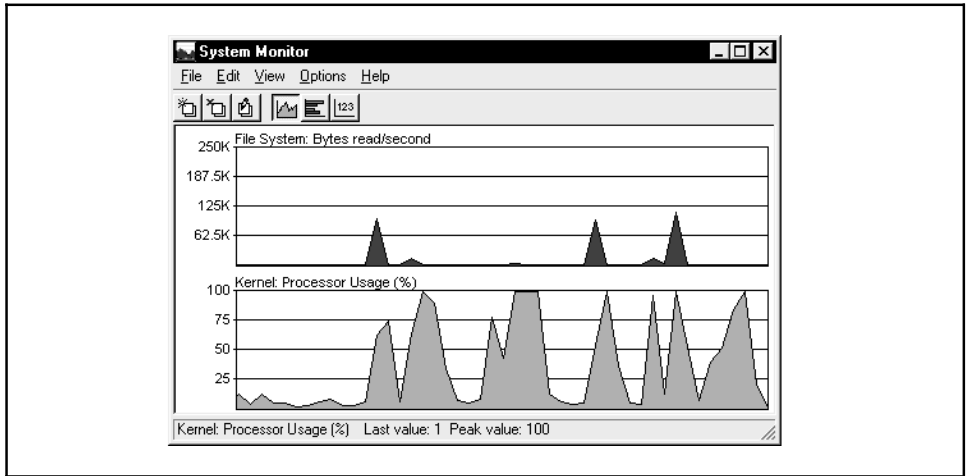
- ⇒ Show the effects of changes you make to your system configuration.
- ⇒ Justify a need for hardware upgrades.
- ⇒ Identify trends over time, such as the loss of performance in a system component.
- ⇒ Determine whether a system is overloaded.
- ⇒ Monitor the performance of network connections and resources.

To start the System Monitor, click the Start button and choose Programs, Accessories, and System Tools, then click the System Monitor option. You’ll see the System Monitor window as shown in Figure 27-1 (the information display will be different, however).

This window shows two charts that display information about your system’s processor utilization and file system. You can change the type of information that is displayed by choosing Add Item or Remove Item from the Edit menu (or by clicking equivalent buttons on the toolbar).

When you choose Add Item, a dialog box similar to the one shown in Figure 27-2 appears. The Category window lists seven different categories of options you can monitor. You may not see all categories (in Figure 27-2 you see only six) because some are related to network options that might not be installed on your computer. When you click a category, a list of items you can monitor appears in the Item window.

The System Monitor window
Figure 27-1.

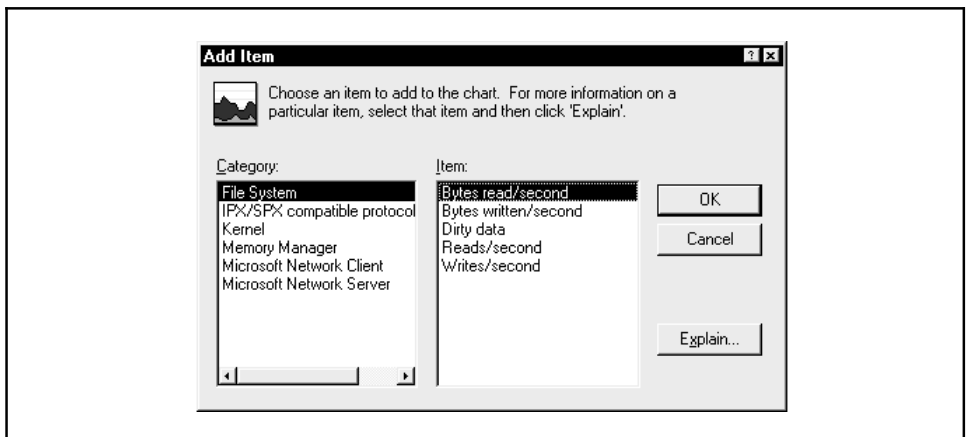


Tip: It's easy to figure out what each item is. To see a description, click an item, then click the Explain button.

These are the seven categories:

- **File System** Includes options for monitoring the number of bytes read and written, and the number of read and write operations.
- **Kernel** Includes options for monitoring processor usage, threads, and the number of virtual machines present.

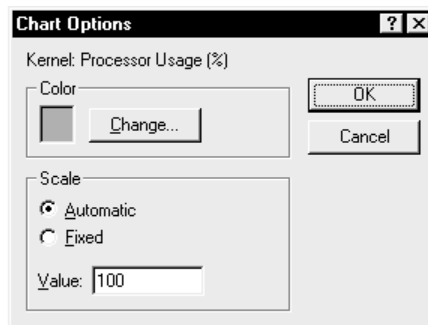
The Add Item dialog box
Figure 27-2.



- ⇒ **Memory Manager** Lets you monitor a number of memory settings and activities, including how memory is allocated, the activities of the memory cache and swap file, and how much free memory is available at any time.
- ⇒ **Microsoft Network Client** Lets you monitor the activities of the client software that is accessing a Microsoft network.
- ⇒ **Microsoft Network Server** Lets you monitor the activities of the server component that provides file and printer sharing to others on the network.
- ⇒ **IPX/SPX-Compatible Protocol** Lets you monitor activities on IPX/SPX networks (usually Novell NetWare) such as packet exchanges.
- ⇒ **Microsoft Client for NetWare Networks** Lets you monitor traffic and other information about Microsoft's NetWare client.

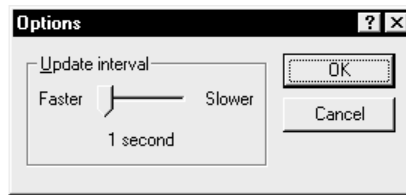
These are the basic techniques you'll use to work with the System Monitor:

- ⇒ To monitor a new activity, choose Add Item. From the Add Item dialog box, choose a category, then click the item you wish to monitor. Click Explain if you want to know what the item displays. When you click OK, a chart for the new item appears in the System Monitor window.
- ⇒ Click the Line Chart, Bar Chart, or Numeric Chart button on the toolbar or choose those options from the View menu to change how information is displayed in the window.
- ⇒ To remove an item from the window, click the Remove Item button on the toolbar. A dialog box appears that displays current items. Click the item you want to remove and press OK.
- ⇒ You can edit how items are displayed. Click the Edit Item button on the toolbar and choose one of the items you are monitoring. The following dialog box appears:



Change the color of the item by clicking the Change button. The Scale field lets you set how big the scale is in relation to the data that is displayed. If you choose Automatic, the scale is automatically set to fit the data. If you choose Fixed, you can type a scale value in the Value field.

- ⇒ You can change the update interval for charts in the window by choosing Charts on the Options menu. The following dialog box appears:



Click and slide the Update interval button to the Faster or Slower position, then click OK.

Performance Optimization

Unlike previous versions of Windows, Windows 95 has built-in performance tuning features so you don't need to be as concerned that the operating system might not be running at its full potential. Windows 95 optimizes itself on the fly. You're also shielded from the complexities of performance tuning that was characteristic in previous versions of Windows.

Windows 95 includes the following features that help improve performance:

- ⇒ Self-tuning features that adjust their settings based on the system load, application requirements, or other needs.
- ⇒ More system resources so users can run more than five applications at the same time without decreasing performance.
- ⇒ A dynamic cache that shrinks and grows based on demand. In Windows 95 it is no longer necessary to manually adjust cache parameters if you change system settings or install new applications that require more cache.
- ⇒ Windows 95 does not need to use a computer's built-in BIOS (Basic Input/Output System) code to access disks. It uses 32-bit disk and file access mechanisms that greatly improve disk performance.

Windows 95 also includes the Disk Defragmenter utility discussed in Chapter 24 to help improve the performance of disk drives by eliminating file fragmentation. File fragmentation occurs over time as files are erased

from disk and new files are stored to disk. DriveSpace, also discussed in Chapter 24, can help you obtain more file storage space on your disk by compressing existing and new data.

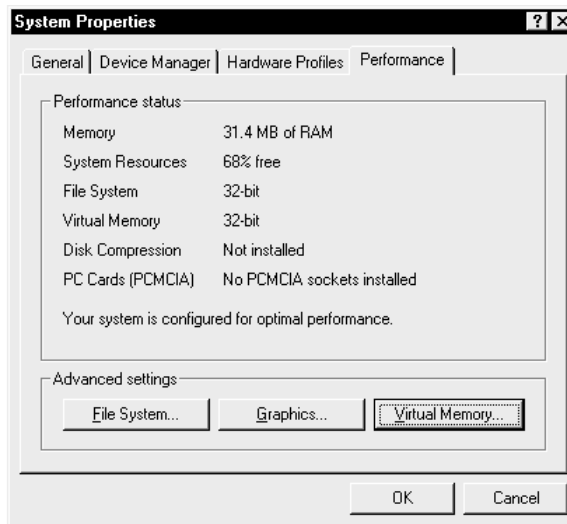
With so many automatic and dynamic settings, there are very few things you need to do to make sure that Windows 95 is running at peak performance. Some options that still exist are discussed in the next section, “Setting Performance Options.”

Setting Performance Options

You can view the performance of your system and set various performance options by opening the System Properties dialog box. Right-click the My Computer object and choose Properties. When the System Properties dialog box opens, click the Performance tab to display a dialog box similar to the one shown in Figure 27-3.



Note: You can get a description of each item on this dialog box by right-clicking the option you want to know more about. When the “What’s This” box appears, click it.



The Performance status display
Figure 27-3.

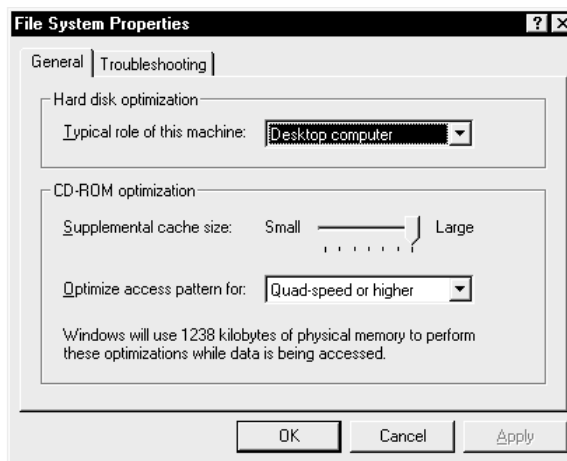
In particular, note the File System setting. Windows 95 always attempts to use 32-bit file access. If your system is using the MS-DOS real mode file system, it is probably because Windows 95 detected an older disk driver and did not have a suitable replacement. You'll experience a significant performance loss if you don't run the 32-bit file system, so refer to your disk drive manufacturer for more information about boosting the performance of the drive under Windows 95 or upgrade the drive to one that is better matched to Windows 95, such as PCI-based SCSI-II controllers and disks.

File System Options

Click the File System button on the Performance dialog box to display the File System Properties dialog box shown in Figure 27-4. Windows 95 makes it easy for you to match its performance settings with the way you use your computer.

Hard Disk Optimization In the Hard disk optimization field, select one of the following options that best describes your normal usage patterns:

- ⇒ **Desktop computer** A typical computer that you use to run programs and access resources on other computers over the network.
- ⇒ **Mobile or docking system** A portable computer that may have less memory or disk space than a desktop computer, or that has a disk drive with a power-saving feature that temporarily shuts the drive down.



Setting hard
disk and
CD-ROM
options
Figure 27-4.

- ⇒ **Network server** A computer that other network users access to read and save files or print to an attached printer. This computer might be *dedicated*, which means that no one actually sits at the computer and uses it to run programs; instead, its sole purpose is to allow multiple network users to access its resources.

CD-ROM Optimization The CD-ROM optimization field in the File System Properties dialog box shown in Figure 27-4 is where you adjust the cache size and access method for your CD-ROM drives. Note the following:

- ⇒ A large cache will improve CD-ROM performance, but reduce available memory. It is not recommended that you increase the cache size if your system has less than 8MB of memory.
- ⇒ The “Optimize access pattern for” field should be set automatically for your drive if the Windows 95 setup process correctly identified the type of drive you have. If not, set this field to a drive speed that matches your drive.



Note: Some CD-ROM manufacturers overstate drive performance. You may need to leave the access pattern field as Windows 95 set it during the installation process.

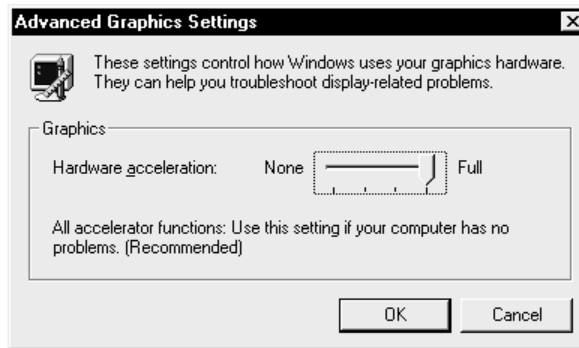
If your system has adequate memory, you can safely increase the size of the CD-ROM cache to obtain a considerable performance boost from the drive. To see if your system has adequate memory, use the System Monitor to monitor the Allocated Memory item in the Memory Manager category. Open applications and perform activities as you would normally and make sure that memory is not overused during the test. If you don't detect any strain on memory, increase the CD-ROM cache.



Note: Some CD-ROM drives have their own built-in cache, so you don't need to boost the Windows 95 CD-ROM cache.

Graphics Options

Click the Graphics button on the Performance dialog box to display performance settings options for your graphics system. An example dialog box is shown in the following:



Refer to your graphics hardware vendor for more information on setting the options on this dialog box.

Virtual Memory Settings

Virtual memory is *pseudo memory*. It exists on a hard drive, but appears to your applications as if it is RAM memory. A system with 4MB of RAM memory might have 4MB of virtual memory, so applications see 8MB of memory to work with. Virtual memory is extremely important on systems with low memory because they let you run several applications at the same time, or load large graphics files or spreadsheets without running out of memory.

The tradeoff for virtual memory is that it is slower than RAM memory because the system must “page” information to and from disk. For example, if you’re not using some block of program code, it is paged out to disk-based virtual memory, then brought back into RAM when needed again. All of this activity is invisible except that you see more disk activity than you would on a system that has enough RAM memory not to need to use virtual memory.

You don’t really need to do anything to enable or manage virtual memory. Windows 95 takes care of it on its own. Unlike previous versions of Windows, the Windows 95 virtual memory manager uses improved virtual memory algorithms that provide better access and performance. The swap file is dynamic, so its size is based on the most current system requirements and available disk space.

However, there may be cases where you need to manually adjust the size of the swap file, create additional paging files on other local hard drives, or switch the paging files completely to another hard drive.

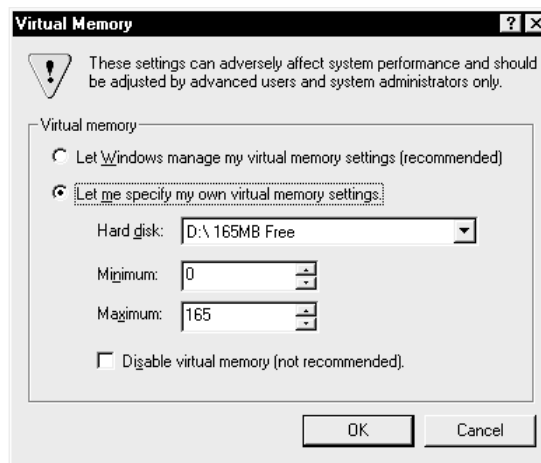


Tip: Place swap files on the fastest drive in your system to improve performance. If Windows 95 did not select the fastest drive during installation, follow the steps below to change it.

To change settings, click the Virtual Memory button on the System Properties dialog box shown in Figure 27-3. The Virtual Memory dialog box, shown in Figure 27-5, appears.

The top button is set by default since Windows 95 normally manages virtual memory. Click the “Let me specify my own virtual memory settings” button to change the current virtual memory settings. If you want to set up an additional paging file, click a drive in the Hard disk list, then type the Minimum and Maximum page file sizes for that drive in the lower fields. To switch the drive where the paging file is located, select a different drive in the Hard disk field, then type new Minimum and Maximum settings.

Changing
virtual
memory
options
Figure 27-5.



The Windows 95 setup process does a good job of detecting devices in your system and installing the appropriate drivers and support for those devices. If you add a new device after Windows is installed, it may detect the new device the next time you start your system. If not, you can use the utilities described in this chapter to install support for the new device or reconfigure how Windows handles the device using these two Windows 95 utilities:

- ⇒ The *Add New Hardware* utility in the Control Panel is a wizard that guides you through the installation of a new hardware component. It can detect a new component and install the appropriate drivers and other software required by the system.
- ⇒ The *Device Manager* is part of the System utility, which is located in the Control Panel. It displays a list of installed devices from which you select a device in order to view or change its configuration. You can also remove a device with the Device Manager.

Windows 95 fully supports new Plug and Play-compliant devices. If you install a Plug and Play device and restart Windows 95, the device is automatically detected and you are asked to place the Windows 95 CD-ROM or one of the diskettes in a drive so Windows can install device drivers for the new hardware.

If you install a non-Plug and Play device, you might need to start the Add New Hardware wizard in the Control Panel to install drivers for the device and configure it to run in your computer. The Add New Hardware wizard is covered first, followed by the Device Manager.

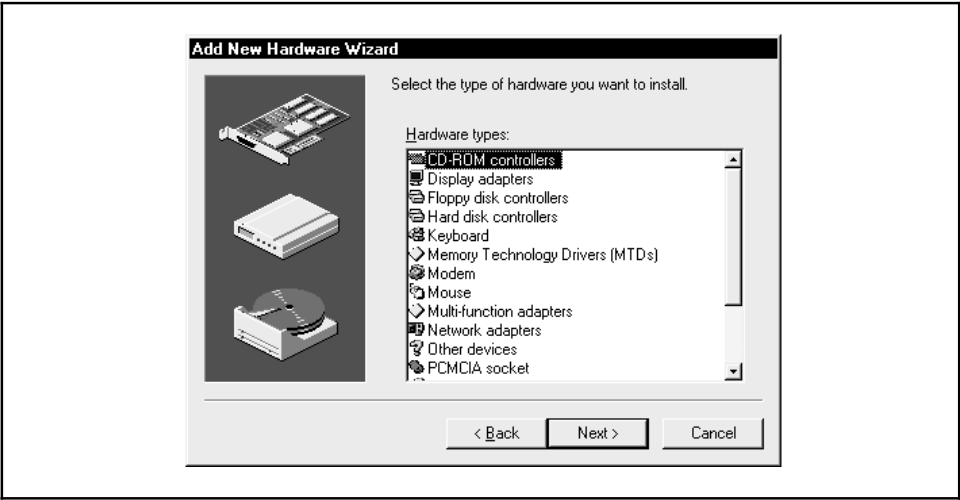
The Add New Hardware Utility

To install and configure drivers for new hardware that you've added to your computer, double-click the Add New Hardware utility in the Control Panel. A wizard starts and displays an opening message. Click the Next button. You are then asked if you want Windows to search for the new hardware. Choose Yes to have the installation wizard automatically identify the new hardware. Choose No to manually select the new device from a list (assuming you know how to identify it). If you choose No, you see the dialog box shown in Figure A-1.



Tip: You can run the device setup wizard to install support for a device even if the device is not physically installed in your computer. When you use this trick, the wizard helps you identify the switches or jumper settings you need to make on the device before you install it in your computer.

The Add New Hardware installation wizard
Figure A-1.

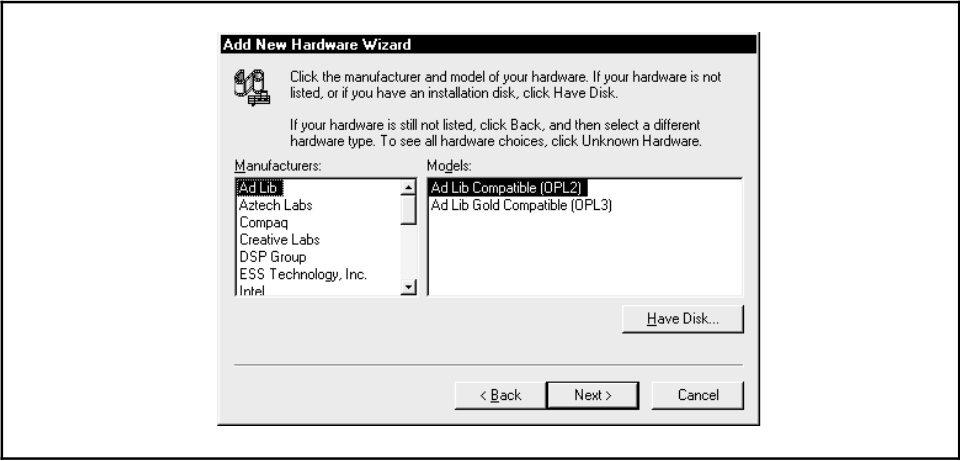


A

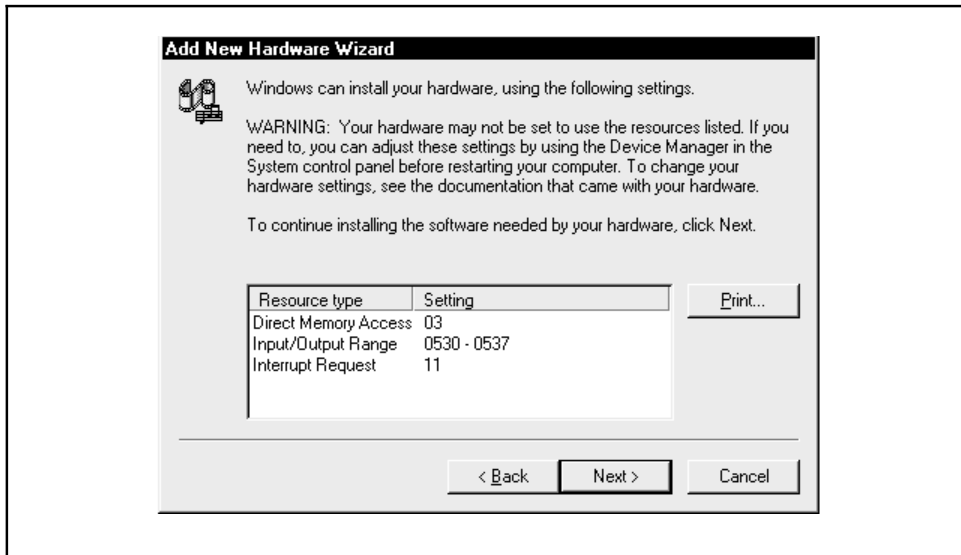
For example, if you choose “Sound, video, and game controllers” from the dialog box pictured in Figure A-1 and click the Next button, you see the dialog box shown in Figure A-2. Choose a Manufacturer in the left pane and a model in the right pane.

If you have a diskette with a new or updated driver, click the Have Disk button and insert the disk in an appropriate drive. Click the Next button to continue. The next window you see contains a list of suggested settings for the particular device you are installing (see Figure A-3). These are the settings that Windows 95 has available for the device. Either write these settings down or click the Print button.

Select the device you want to install
Figure A-2.



The wizard lists available resources and suggested settings for your device
Figure A-3.



Note: If you haven't physically installed the device yet, change its jumpers or switches to match one of the recommended settings. If you have installed the device, you might need to remove it after running this procedure and reset its jumpers or switches to one of the recommended settings.

Click the Next button to complete the installation. You see one last screen that indicates that the procedure was successful. Click the Finish button.

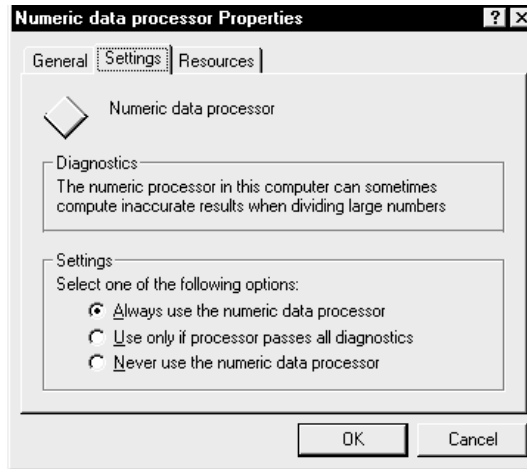
Windows 95 asks if you want to restart your computer. Before doing so, refer to the next section that describes how to use the Device Manager. If a device is already installed and the setup wizard recommends other settings, you'll need to specify those new settings using the Device Manager.

The Device Manager

You use the Device Manager to view or change the settings of devices on your system. The Device Manager also helps you in performing these tasks:

- ⇒ Identifying free resources like IRQs (interrupt request lines), I/O ports, and memory settings that you might want to use for new devices you are installing.
- ⇒ Identifying conflicting devices and helping you resolve the conflicts.
- ⇒ Temporarily disabling a device when you are troubleshooting your system or temporarily installing some other device in its place.

The Device Manager can also help you overcome known system problems. For example, early versions of the Intel Pentium processor are known to have a flaw in the built-in numeric coprocessor. If you display information about the processor (as described later), you see the following dialog box, which allows you to disable the processor if it does not pass diagnostic testing, or choose never to use the processor at all:

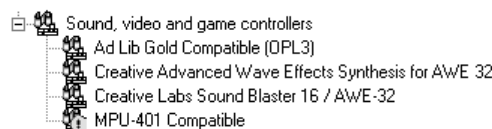


You can open the Device Manager in either of two ways:

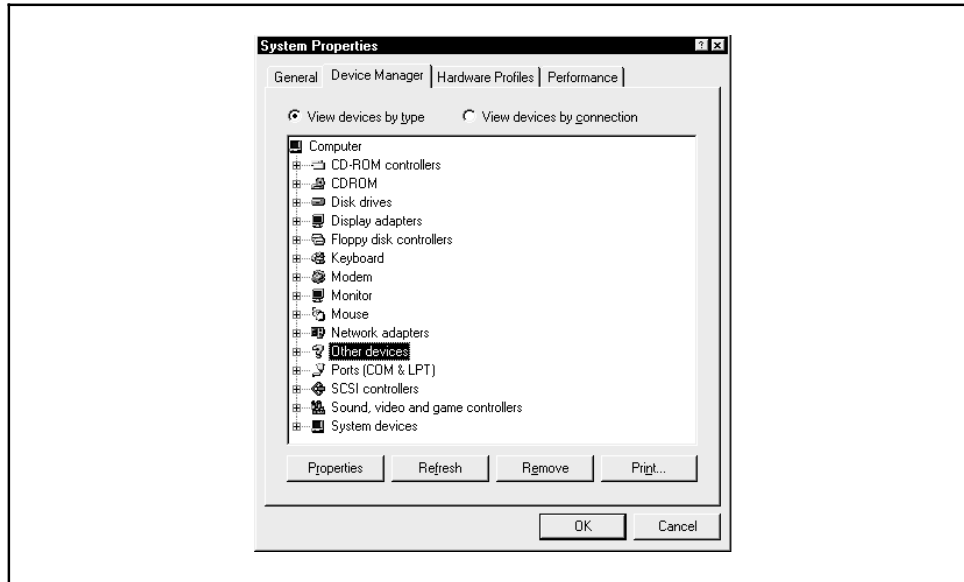
- ⇒ Right-click the My Computer object on your desktop, choose Properties, then click the Device Manager tab.
- ⇒ Open the Control Panel, double-click the System utility, then click the Device Manager tab.

In either case, you see the Device Manager page, similar to the one pictured in Figure A-4, with a listing of device types on your system.

You can expand any device type by clicking the plus-sign in front of it or double-clicking the device type name. When expanded you see a list of the specific devices of that type that are installed on your system. For example, the "Sound, video and game controllers" type is shown expanded here:

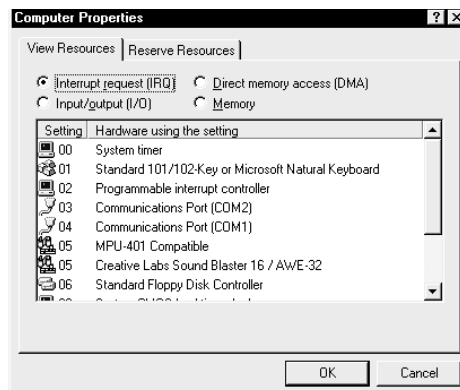


Devices are listed in device categories
Figure A-4.



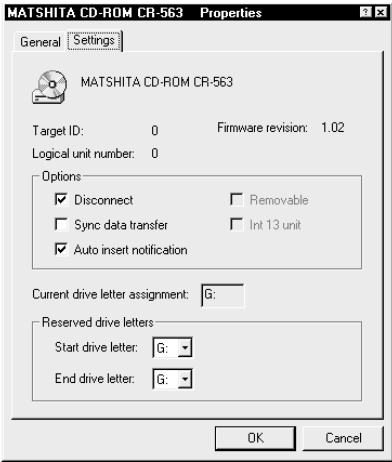
You can double-click any device to view its properties, or click it and click the Remove button to remove it from your system. Note the exclamation point on the MPU-401 device, which indicates a device conflict. Refer to the “Viewing and Changing Device Properties” section later in this chapter for help in dealing with device conflicts.

Double-click Computer (at the top of the device list you saw in Figure A-4) to view the usage of interrupts, I/O port, DMA, and memory settings. Click the button of the listing you want to view. The Computer Properties dialog box shown here provides much of the same information as the DOS-based Microsoft Diagnostics (MSD) program:



You can also change the settings of some devices. For example, if you open the Properties dialog box of an SCSI-compatible CD-ROM drive (or a hard drive) and click the Settings tab, you'll see a dialog box similar to the one shown here, in which you can change various SCSI options:

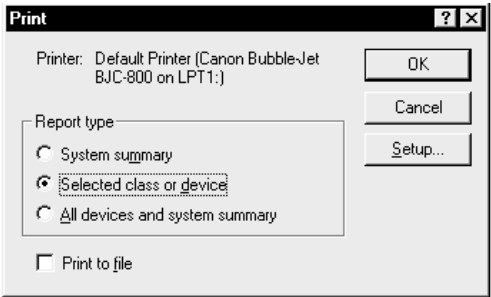
A



Note that, in most cases, Windows 95 automatically sets the options on the Settings tab to a setting that is appropriate for your system. Experienced users might want to change these options for a variety of reasons.

Printing Device Information

You can print information about a selected device or all devices by clicking the Print button on the System Properties dialog box (shown earlier in Figure A-4). When you do this, the following dialog box appears:



If you just want to print information about a selected device, first select the device, then click the Print button, and make sure the "Selected class or device" option on the dialog box is marked. The "All devices and system summary" option prints a long, detailed listing of the settings for each device in your

computer. You might want to check the “Print to file” checkbox before selecting this option. Then you can open the listing in a word processor and edit out the parts you don’t need or select a smaller font so the printout doesn’t require a lot of paper.

Viewing and Changing Device Properties

When you click a device and then click the Properties button, you see a dialog box similar to the one shown in Figure A-5. (The Properties dialog box you see in Figure A-5 was opened for the Creative Labs Sound Blaster 16 board, but you can view a similar dialog box for any device on your system.) There are three tabs on this dialog box:

- ⇒ **General** The General page lists information about the device and the drivers that support it. It also briefly describes whether the device is working properly. The Device usage field is where you enable or disable the device for the current configuration (see “Changing Configurations” below).
- ⇒ **Driver** The Driver page is where you add or change the software drivers that Windows uses to control the device.
- ⇒ **Resources** The Resources page is where you can change resources used by the device such as the IRQ (interrupt request line), I/O port, or memory settings.

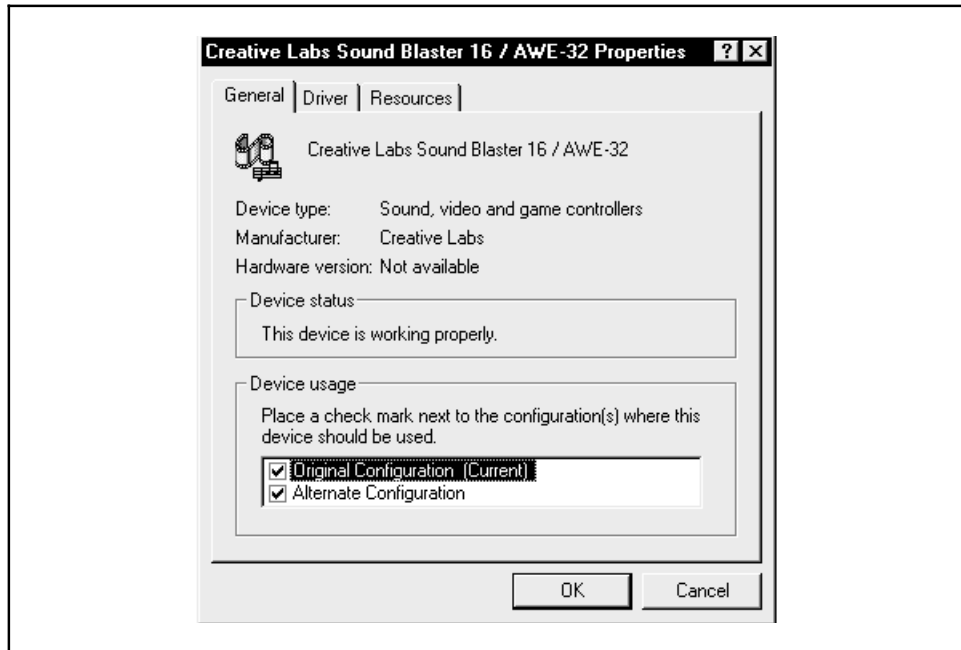
Disabling a Device

The Device usage field is where you enable or disable a device. To disable a device, click its name to clear the checkmark from the configuration listed in the lower field. This prevents Windows from loading the driver for the device the next time you start the operating system. The driver files are not deleted from your system’s hard drive. (To delete these files, and actually remove the device, see the “Removing a Device” section at the end of this chapter.)



Note: If you want to free the resources (IRQs, I/O ports, etc.) used by a non-Plug and Play device so that other devices can use the resources, you must disable the device and then physically remove the device from your system. If the device is Plug and Play-compliant, you don’t need to physically remove the device since Plug and Play devices automatically free their resources when disabled.

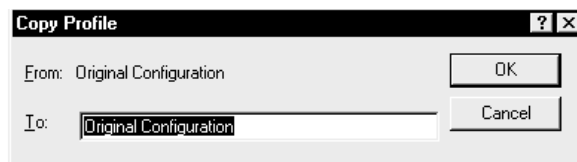
The Properties
box for a
device
Figure A-5.



Changing Configurations

A configuration is a specific set of device settings. Normally, your computer will have only one set of device configurations called “Original Configuration.” If you have a portable computer or a computer on which you often change the hardware configuration (a test platform, for example), you can create other configurations. Then when you start Windows, you can choose the configuration you want to use for the current session. Follow these steps to create a new configuration:

1. Open the System Properties dialog box by double-clicking the System utility in the Control Panel.
2. Click the Hardware Profiles tab.
3. Make sure “Original Configuration” is selected in the window, then click Copy to display the following dialog box:



4. Type a new name for the configuration in the To field.

Now you can click the Device Manager tab and configure devices for the new configuration profile. You can see how to do this if you look again at the Device usage field in Figure A-5. To enable or disable a device for a particular configuration, simply mark or unmark the checkbox next to a configuration. In Figure A-5, Original Configuration is the initial configuration created during Windows 95 setup; Alternate Configuration is a special configuration I created later following the steps above.

When you reboot your computer, a list of options (similar to the following) appears onscreen where you can choose the device configuration with which to start Windows 95:

Select one of the following configurations:

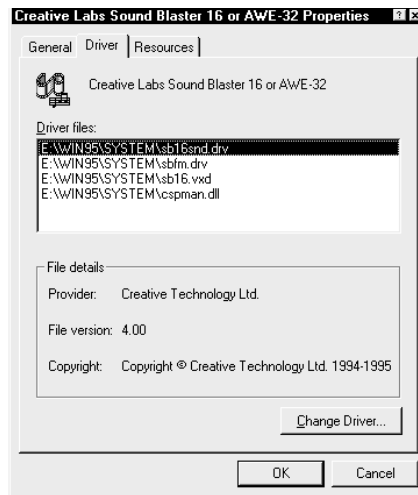
1. Original Configuration
2. Alternate Configuration
3. None of the above

Enter your choice:

Adding or Changing Device Drivers

You can view information about the software device drivers that Windows uses to control a device, or update a device driver by clicking the Driver tab on the Properties dialog box for a device. You'll see a dialog box similar to the one shown in Figure A-6 that lists each of the drivers for the device. Click a

The Driver tab lists the drivers that support a particular device
Figure A-6.



driver in the Driver files list to view detailed information about it in the File details box.

You might need to update a device with a new driver that you receive from the device manufacturer. To update drivers for a device, first select a driver in the list, then click the Change Driver button. You'll see the Select Device dialog box shown here, which verifies the hardware component related to the driver you selected. Click the Have Disk button to load a new driver from diskette.

A



Changing Device Resources

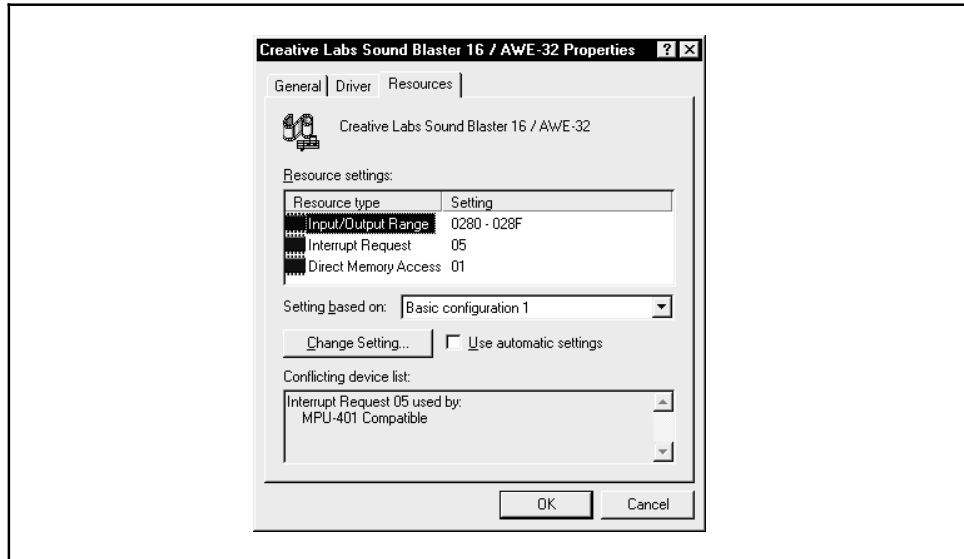
Click the Resources tab to change IRQ settings, I/O port settings, and memory settings for a device. This dialog box is interesting because it helps you locate potential device conflicts and/or select settings that don't conflict with resources used by other devices. Figure A-7 shows the resources for the Creative Labs Sound Blaster.



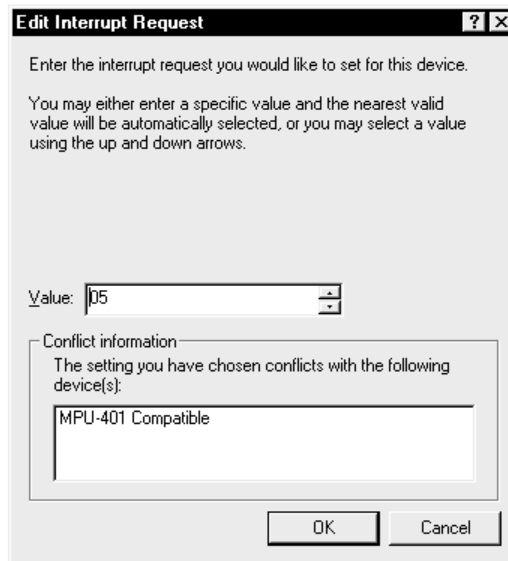
Caution: Do not change settings in the Device Manager for Plug and Play devices. The system will do this for you automatically.

Note the Conflicting device list at the bottom of the box. It indicates that the current IRQ (interrupt request) setting of 05 is conflicting with another device. You can change the setting by clicking the resource name in the

The Resources page is where you change interrupt, I/O, and other settings for a device
Figure A-7.



Resource settings field, and then clicking the Change Setting button. This displays a dialog box similar to the one shown here:



To find a setting that doesn't conflict with another device, click the up- or down-arrow button in the Value field and watch the Conflict information window. You'll see the message "No devices are conflicting" when you display a setting that doesn't conflict with other devices.



Note: Make sure you can actually make the change on your hardware device. Also, some devices may not have jumper or switch settings for all the values displayed in the Value field.

A

The “Setting based on” field (shown in Figure A-7) displays the current setting configuration. Other configurations are available if you click the down-arrow button. A configuration is just a combination of pre-selected IRQ lines, I/O port settings, and memory settings. You can choose another configuration, but be aware that the device might not run as efficiently with other settings.

Removing a Device

If you need to remove a device, select it from the list and click the Remove button. You’ll see a dialog box similar to the one shown here:



If you have multiple device configurations, you can choose to remove the device from all configurations by clicking the “Remove from all configurations” option, or remove it from a selected configuration by clicking the “Remove from specific configuration” option and choosing the configuration from the Configuration field.



Caution: Don’t remove a device unless you really need to. Try disabling a device before actually removing it from your system. (See the “Disabling a Device” section earlier in this chapter.)

Windows 95 provides significant advances in its printing features. For example, it supports bidirectional communication with printers so that printers can provide Windows 95 with information about their current state and attributes. The Windows 95 printing system also returns control to users more quickly after a job is sent to the printer due to a new print spooler. Mobile and remote users can defer printing until later if they are not connected to a printer. Print jobs are stored in a local queue and automatically sent to the printer when they reconnect with the printer or reconnect to a network that has printers.



Tip: Do you need to print files on a high resolution printer at a local print shop or on a co-worker's printer? You'll see how to install support for printers that are not actually attached to your computer, then create print jobs on diskettes that you can send to the print shop or your co-worker for printing.

Installing a Printer

All printer objects and installation utilities are located in the Printers folder, which you'll find by opening the My Computer window. You can also choose Settings on the Start menu, then click the Printers option. The window will look similar to this:



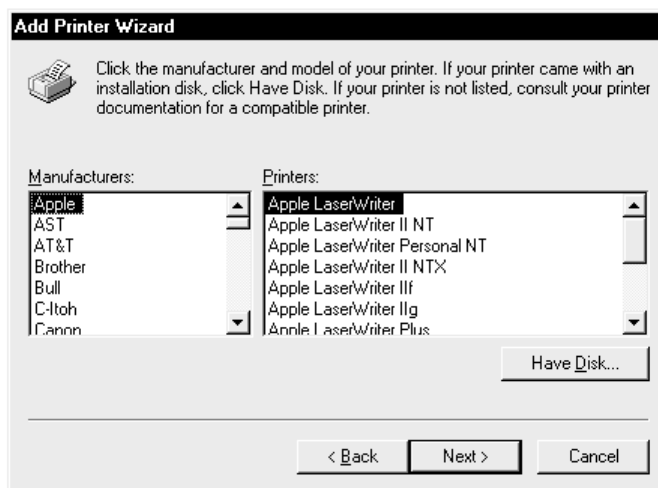
The Printer window holds objects for printers that are already installed, as well as Microsoft Fax devices. If you have access to a printer attached to another computer on your network, you'll see it listed in this window as well.

You can install support for printers, even if they are not attached to your computer. For example, if you want to print a file on a high-resolution Linotronic printer at your local print shop or service bureau, you can create print files on your computer that you copy to diskette and bring into the

service bureau for printing. Start by installing support for the printer on your computer, then specify FILE as the output port instead of a normal printer connection port. Then when you print a file on the printer, you'll be asked to type a filename and disk location for the print file.

To install a new printer, double-click the Add Printer object. This starts up the printer installation wizard. Click the Next button on the opening screen, then choose Local printer to install a printer attached to your computer. (To install support for a printer located on your network, refer to the next section, "Installing Network Printers.")

After selecting Local printer, click the Next button to continue with the installation. You'll see the Add Printer Wizard dialog box, shown here, from which you can select the brand and model of your printer:



Select a manufacturer from the left pane (type the first letter of the manufacturer name to jump to that section). After selecting a manufacturer, select a model from the right pane.



Note: The drivers will be installed from the Windows 95 CD-ROM or disk set, but if you have a new driver on a diskette, click the Have Disk button, then select an appropriate driver from the disk.

Next, you're asked to specify the port to which the printer is attached. If you want to create print jobs on disk for this printer, choose FILE in the list.

When you click the Next button, you're asked to type a name for the printer; Windows 95 doesn't care what you type here. This name identifies the printer to you or other people so it doesn't need to be the model name of the printer. For example, you could type a name like "Linotronic—prints to a file." When you click Next, you're presented with the Finish dialog box and asked if you want to print a test page.

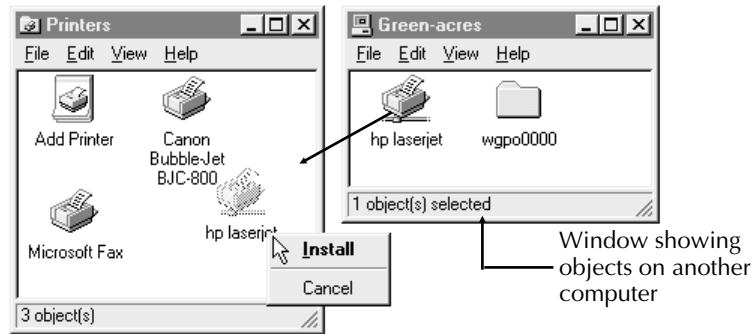
Installing Network Printers

It's easy to install support for a printer that is attached to another network computer. Windows 95 includes a new Point and Print feature in which you drag and drop the remote printer in the Network Neighborhood window to your local Printers window. The drivers for the printer that are already installed on the remote computer are then copied to your computer so you can print to the network printer as if it were local. To share a printer on your system that other people can access with Point and Print, refer to the next section, "Enabling Point and Print."



Tip: Before starting this procedure, close any applications that might be using printer support; otherwise, the procedure may stop when it tries to copy files that are in use.

1. First, make sure the printer you want to access on the other computer is shared. You might need to contact the person in charge of that computer.
2. Open the Network Neighborhood window and double-click the object for the network computer that has the printer you want to access. You see the shared printer in the window.
3. Open the Printers window on your computer by choosing Settings from the Start menu and Printers.
4. Right-click the shared printer, then drag and drop it from the remote computer's window to your Printers window as shown below. Choose Install from the context menu.



5. The Add Printer wizard opens immediately and asks if you want to print from MS-DOS based programs to this printer. Answer Yes if you run MS-DOS programs that will need to print to the network printer.
6. In the next dialog box, you can change the default name and specify whether you want it to be the default printer for your Windows applications. You might want to change the name to indicate the location of the remote printer.
7. Finally, you're asked if you want to print a test page. Answer appropriately and click the Finish button to complete the installation.

When you click the Finish button, the printer driver files begin copying from the remote computer to your computer.

Enabling Point and Print

All you need to do to enable Point and Print for a printer on your system is to share it. Right-click the printer, then click the Sharing option. Click the Shared As button, then type a share name. If you want to require password access, type a password in the Password field, then give the password to people to whom you want to give access to your printer.

If user-level security is implemented on your system, you need to perform some additional steps to allow others to access the printer:

1. Open the Windows Explorer.
2. Locate the Windows SYSTEM directory.

3. Right-click its icon, then choose Sharing from the context menu.
4. Click the Add button, then in the Add Users dialog box, add the users whom you want to access your printer and assign them read-only access rights.

Configuring Printers

Once your printers are installed, configure them by opening the Properties dialog box for the printer, as shown in Figure B-1. To open this box, right-click a printer object in the Printers window (not a printer shortcut on the desktop), and choose Properties from the context menu. The options on the Properties box differ, depending on the printer.

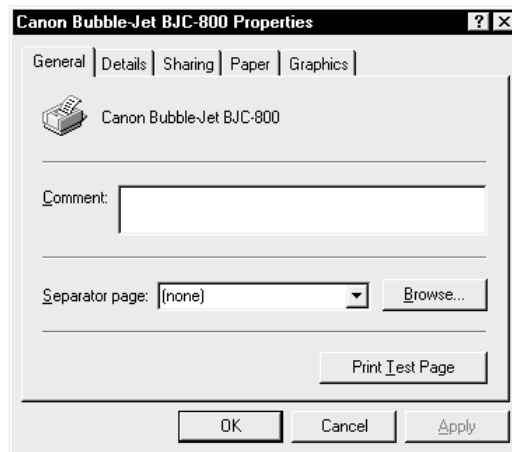
You'll see a group of tabs at the top of Figure B-1 (General, Details, Sharing, Paper, Graphics, and Font). Note that not every page appears on every properties dialog box. The tabs that appear depend on the type of printer. The following sections describe the basic features of each of these pages and important settings you might need to make.

If you are configuring a PostScript printer, refer to the "PostScript Printers" section later in this appendix (or right-click a field or button).



Note: For detailed information about each option on a dialog box, click the question mark button in the upper right, then click the field you have a question about.

A typical
printer
properties
dialog box
Figure B-1.



The General Page

The General page shows the name of the printer and other information. You can type comments about the printer in the Comment field for your own information. These comments will be visible to other people on your network if the printer is shared. The Separator page is a page that separates each print job the printer does. If the printer is shared, separators can list information about each print job, such as who owns it or where it should be sent (since the printer is remote from the person who sent the print job).

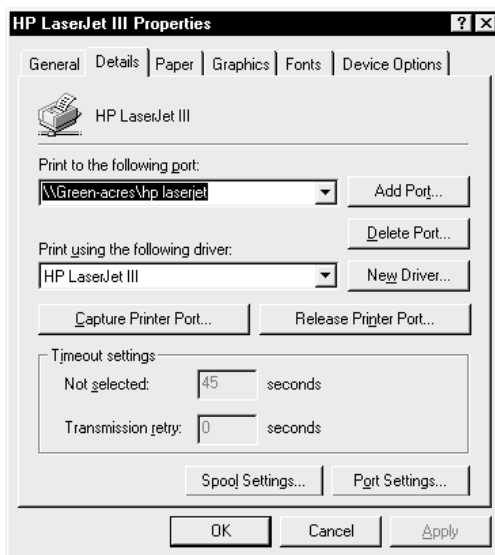
B

The Details Page

The printer port is where you change or update printer drivers and specify other technical settings. In Figure B-2, the printer port name is a computer name because the printer is attached to a shared network computer. The “Print to the following port” field indicates that the printer is attached to the computer called “Green-acres.”

Click the Capture Printer Port button to map a network printer to a local port. Applications that don’t recognize shared printers in a Windows 95 environment require that you assign a network printer to an LPT or COM port. If you have a local printer attached to LPT1, then assign LPT2 to the shared network printer.

Change port, capture, and time-out settings on the Details page
Figure B-2.



Spool Settings

Clicking the Spool Settings button shown in Figure B-2 gives you the Spool Settings dialog box in Figure B-3. Use this screen to change how print jobs are sent to printers. You can trade off printing speed for the ability to quickly return to your applications and get other work done. The option “Spool print jobs so program finishes printing faster” is set by default. If you disable this option by clicking on the “Print directly to the printer” option, your print jobs start printing immediately, but you can’t continue with other work and you can’t pause the printer from Windows 95.

The Sharing Page

The Sharing page, shown in Figure B-4, is where you enable the sharing of your local printer. Click the Shared As button, then type a share name, comment, and password. The share name identifies the printer to other people on your network, so be descriptive with a name like “Tom’s LaserJet.”

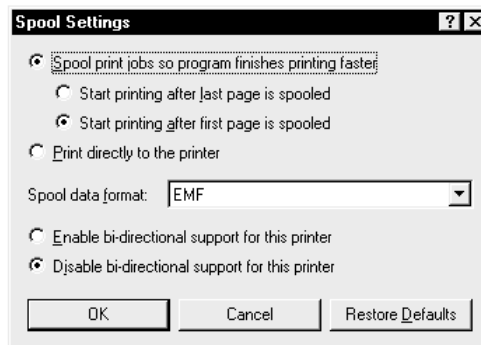
The comment field lets you provide additional information about the printer. For example, you could type “Paper tray 1 holds letterhead.” You can restrict access to the printer by typing a password, then distributing the password to only those people you want to access the printer.

The Paper Page

The Paper page, shown in Figure B-5, is where you define the type of paper you want to load in the printer and the orientation, either portrait (normal) or landscape (to print sideways or horizontally on the page).

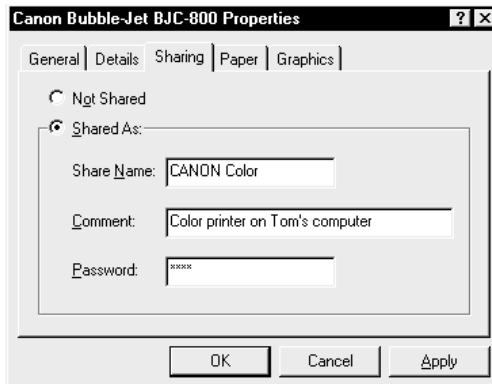
The Paper Source field is where you specify where you want the printer to get paper. Some printers have multiple paper trays with different types of paper. You can also choose manual feed in this field.

The Spool Settings dialog box lets you configure how print jobs are sent to printers
Figure B-3.



The Sharing page lets you share a printer with other network users

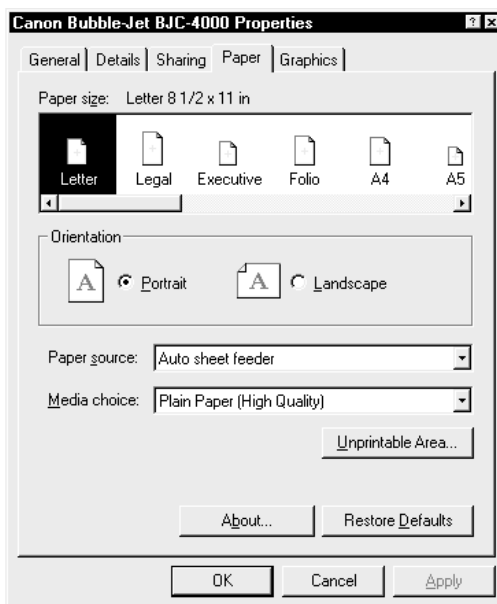
Figure B-4.



T ip: If an edge of your text isn't printing, click the Unprintable Area button and extend the printable area boundaries.

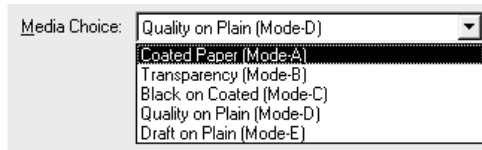
The Paper page lets you define paper size, print orientation, and the source and type of paper

Figure B-5.



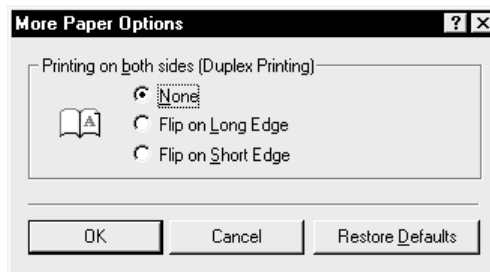
Media Choices

The Media Choice field appears on some special-purpose printers. For example, printers that “spray” ink support different papers for high-quality printing. The printer adjusts the amount of ink it uses when printing, based on the media type you select. For example, more ink is used when printing on Transparencies. An example of the Media Choice list is shown here:



Duplexing Options (Double-Sided Printing)

Printers that can print on both sides of the paper include a More Options button on the Paper page where you can specify how you want duplex printing handled. You'll see a More Paper Options dialog box similar to this one:

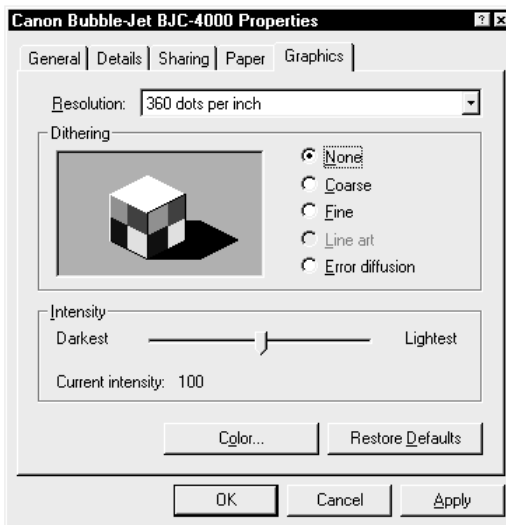


If you click an option, the “book” icon on the left changes to give you a graphical representation of the option you’ve chosen.

The Graphics Page

The Graphics page, shown in Figure B-6, lets you specify how you want the printer to handle graphics. You can choose low-resolution or high-resolution graphic output, depending on the quality you need. Keep in mind that higher-quality output requires more ink or toner and may be unnecessary when printing drafts, for example. The dithering options let you reduce or enhance the quality of printed graphics, depending on your quality versus print-speed requirements.

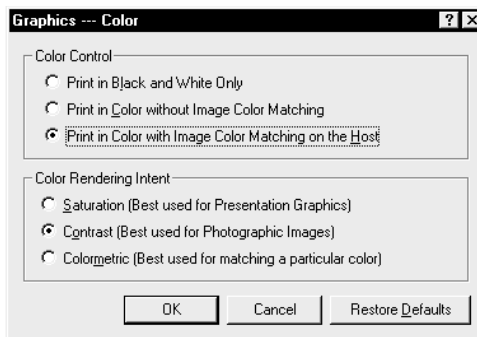
Set the print quality for pictures on the Graphics page
Figure B-6.



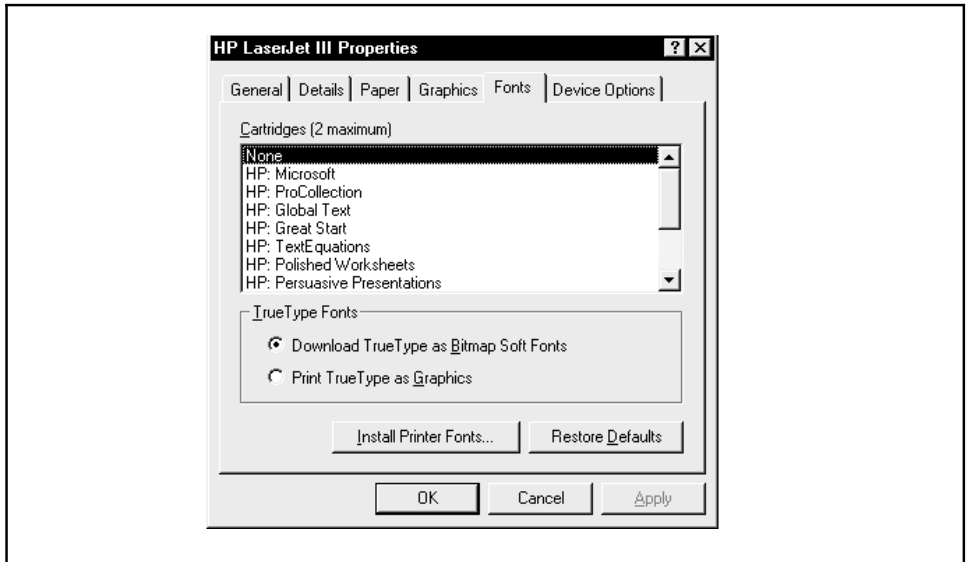
Note: You need to experiment with these options on your printer. Load a picture that best represents the type of graphics you will print into Paint or a similar application, then try printing with different settings on the Graphics page. Be sure to try different intensity settings.

If you have a color printer, click the Color button to open a dialog box like the one shown in Figure B-7. This is where you can specify that the printer only print in black-and-white mode, or that it should use color output. If you are printing a text-only document, make sure the “Print in Black and White Only” option is set.

Typical color
 printer settings
Figure B-7.



The fonts
dialog box
Figure B-8.



If you are printing in color, you can choose the second option, “Print in Color without Image Color Matching,” or the third option, “Print in Color with Image Color Matching on the Host,” to print with it. Image Color Matching calculations are performed before your document is printed to match the color on the page with the color on your screen. In the Color Rendering Intent field, select an option based on whether you are printing solid color graphics like charts, color photographs, or a specific color. The Colormetric option is best if you are trying to print a specific color value that print shops can match.

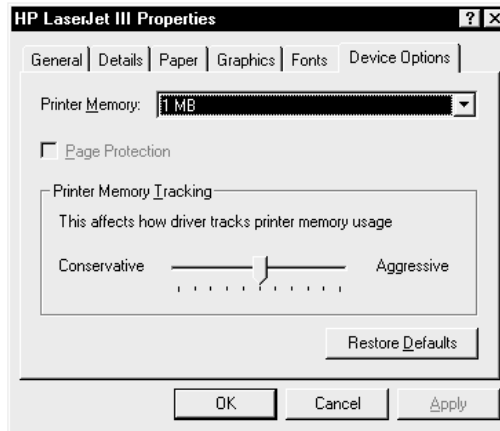
The Fonts Page

The Fonts page, shown in Figure B-8, lets you specify the font cartridge you want to use for printers that support plug-in cartridge fonts. In the TrueType Fonts field, you can increase printing performance if you match the settings to the type of document you are printing. Choose “Download TrueType as Bitmap Soft Fonts” if your document does not have a lot of graphics, but does contain many font changes throughout. Choose “Print TrueType as Graphics” if your document contains a lot of pictures, but only one or two font changes.

The Device Options Page

Some printers have a Device Options page in which you specify various hardware or device settings for the printer. An example for the HP LaserJet

printer is shown in the following. Right-click a field to get information about it.

**B**

PostScript Printers

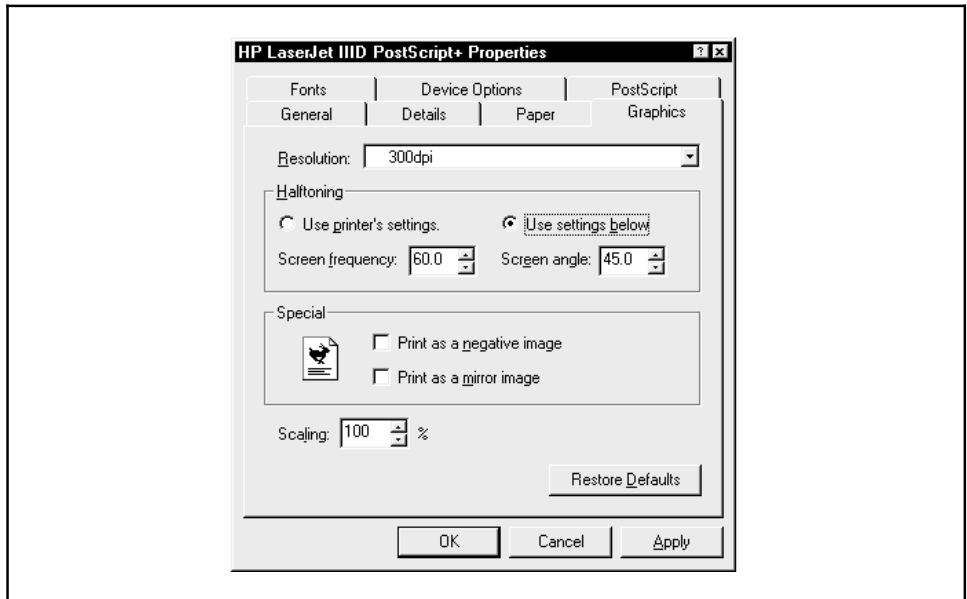
The PostScript printer driver in Windows 95 was jointly developed by Microsoft and Adobe Systems (the developer of PostScript). Although most of the pages on the Printer Properties dialog box are similar, there are some special options you should be familiar with.

The Graphics Page for PostScript Printers

The Graphics page for PostScript printers, shown in Figure B-9, contains halftoning options and scaling options.

The options in the Halftoning field let you specify the lines per inch (frequency of dots) and angle of the pattern grid that define halftone screens. You can click the "Use printer's settings" option to use the settings defined in the printer, or set custom halftone options by clicking the "Use settings below" option and changing the values in the "Screen frequency" and "Screen angle" fields. You would only need to change the default values if you see unnatural looking lines or moiré patterns in photographs and detailed pictures. This distortion is caused by reproducing pictures with dot patterns and can be reduced by increasing the dot frequency or changing the angle of the dot "grid" slightly. If you change the settings and want to return to default settings, click the "Use printer's settings" button.

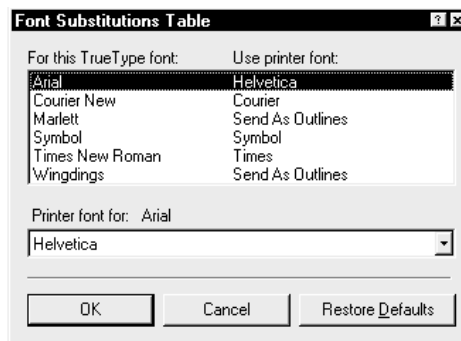
Graphic options for PostScript printers
Figure B-9.



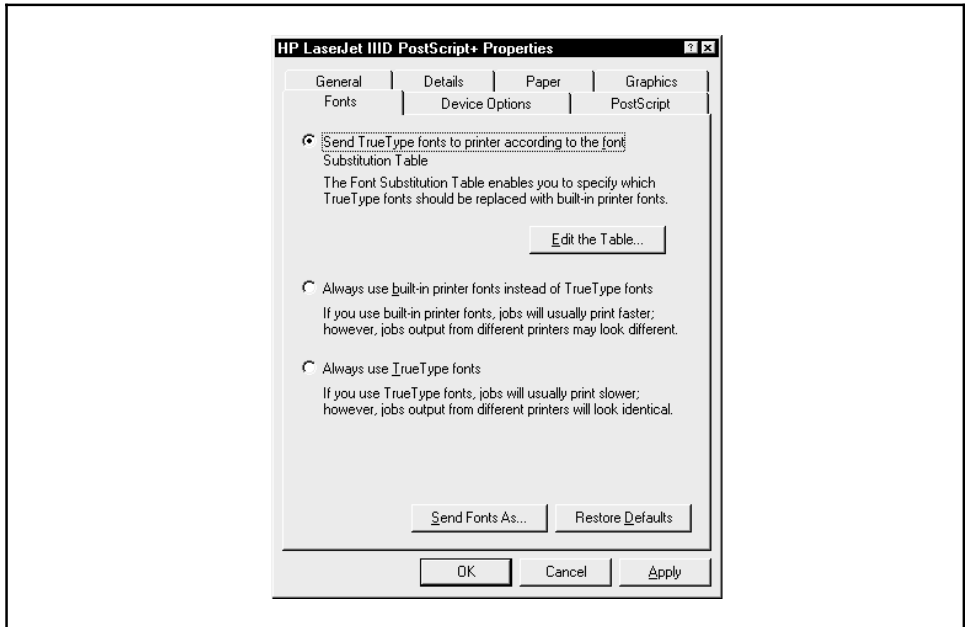
The Fonts Page for PostScript Printers

The Fonts page for PostScript printers, shown in Figure B-10, has options that let you define how you want to print documents that contain Windows 95's TrueType fonts.

If you choose "Send TrueType fonts to printer according to the font Substitution Table," the TrueType fonts are converted to PostScript fonts according to the substitution table, which is pictured below. You can edit this table by clicking the "Edit the Table" button. In most cases, the substitutions in the table are appropriate since the TrueType fonts and the matching PostScript fonts look very similar. If a matching font is not available, the TrueType fonts are sent as outlines, which means they are handled more like graphic images.



You can configure font translations from TrueType to PostScript on the PostScript Fonts page
Figure B-10.

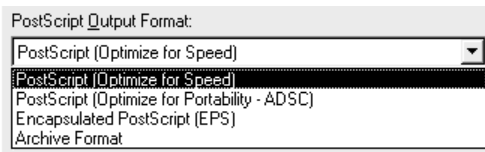


You can edit the substitution table if you don't like the fonts that are substituted for TrueType fonts or if you have a more suitable substitution. Click the "Edit the Table" button, then click a TrueType font in the top window and choose a different PostScript font by clicking the down-arrow button in the bottom window.

You can select either of the two lower options on the dialog box in Figure B-10 to specify that you want to use the built-in printer fonts instead of TrueType fonts, or that you don't want to substitute TrueType fonts for other fonts.

The PostScript Page for PostScript Printers

The PostScript page for PostScript printers lets you define special options that determine how print jobs are output. In the PostScript Output Format field, you can specify one of the following options:



- ⇒ Click the “PostScript (Optimize for Speed)” field to print a document on your printer at the highest possible speed.
- ⇒ Click the “PostScript (Optimize for Portability - ADSC)” option to create a PostScript print file that you can print on another printer. ADSC (Adobe Document Structuring Conversions) files are fully self-contained objects that contain PostScript commands for printing the document on a different printer.
- ⇒ Choose the “Encapsulated PostScript (EPS)” option if you want to print the file as an image in another document that will be printed from a different program.
- ⇒ Click the “Archive Format” option to create a PostScript data stream that gets stored in a file that you can use later.

In the PostScript Header field, you can specify whether you want to send the header information to the printer. The header information defines how the printer should be set up for your print job. For local printers, you only need to send the information once, unless you change default settings. If you send print jobs to a shared PostScript printer, send the header information with each print job since other users might have changed the printer settings.

Windows 95 provides support for a wide variety of modems and fax modem peripheral adapters. It also allows those modems to run at much higher rates than was possible in Windows 3.1, so you can send and receive information in much less time. This equates to lower phone costs and much better response when you are interacting with online services or using the Internet.

- ⇒ Windows 95 can take advantage of even faster transmission services such as ISDN (Integrated Services Digital Network), which can provide full digital transmission speeds in the range of 56,000 to 128,000 bits per second.
- ⇒ Windows 95 has full fax support so you can send and receive faxes from your computer. If you don't have a fax modem attached to your computer, you can use one that is attached to another computer on your network.
- ⇒ You can do other tasks while your communication software is busy in the background. For example, you can continue working on a document while the modem software downloads a file from another computer.

To set up communications on your system, you need an available COM port and a modem. You then install support in Windows 95 for these devices. Most systems already have one or two COM ports installed and Windows 95 detects these ports during setup.



Note: Internal modems have their own built-in COM port. You might need to disable an existing COM port in your system if you are installing internal modems.

Installing a Modem

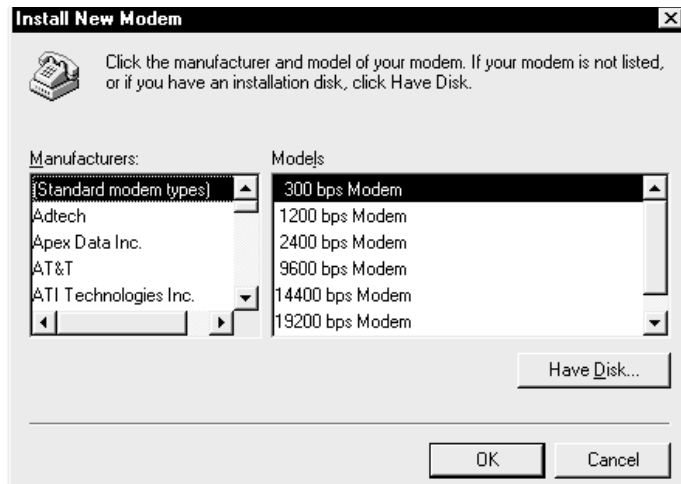
Follow the instructions in the modem's manual for connecting the modem to your computer. If you're installing an internal modem, make sure its COM port settings don't conflict with any COM port settings in use by your computer. You might need to disable one of your computer's COM ports when installing an internal modem.



Note: Windows may automatically detect your modem, either when you connect it, or after you restart your computer.

To manually install a modem, open the Control Panel and start the Add New Hardware wizard. Choose the “Automatically detect installed hardware” option, then click the Next button. The wizard attempts to detect your modem.

If the automatic detection routine correctly selected your modem type, click the Next button to see the final dialog box, which indicates a successful installation. Then click Finish to end the installation. If the automatic detection is *incorrect*, click the Change button to see the following dialog box:



You can manually select a modem make and model from this list that matches the modem installed on your computer.

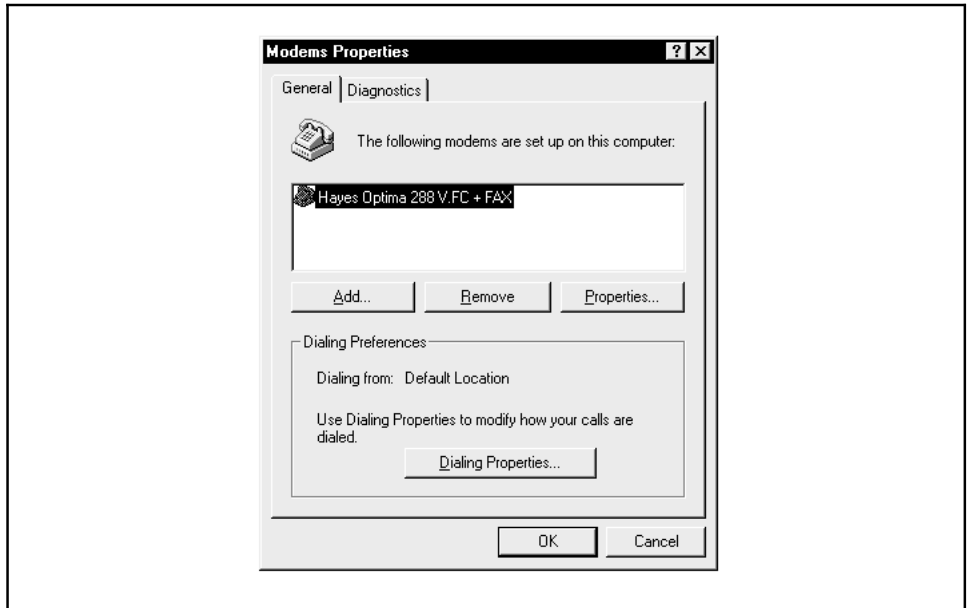
Setting Modem Properties

You might need to change the settings of your modem or check its properties. You can do so by opening the Modem utility in the Control Panel. You'll see a dialog box similar to the one shown in Figure C-1, with your current modem or modems listed in the window. You can install a new or additional modem here by clicking the Add button, or you can click Remove to remove a modem that's already installed.

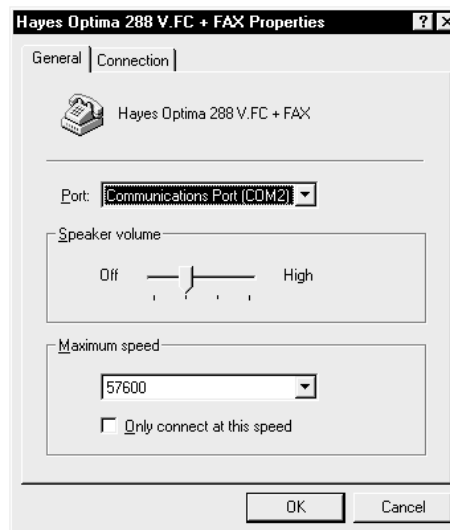


T ip: The Dialing Properties button displays the Dial Helper as discussed in Chapter 16. You use the Dial Helper to create custom dialing configurations for your office, home, or traveling PC.

Open the modems utility in the Control Panel to change modem properties
Figure C-1.



Select a modem and click Properties to display the following dialog box and change the settings of a selected modem:



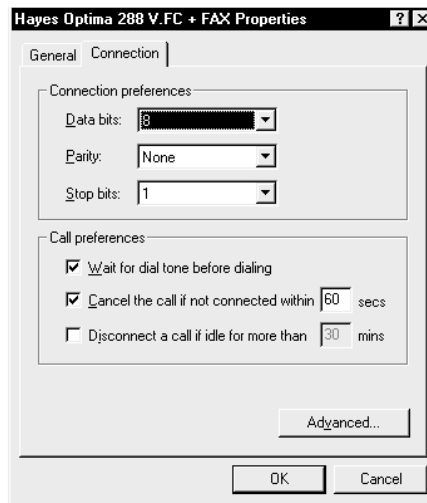
On the General tab, you can change the communication port, speaker volume, and maximum data transfer rate for this modem. The last option

adjusts speed settings, which is usually handled automatically when two modems connect with one another. In most cases you won't need to change any of these settings.



T**ip:** If you want to know more about any option or setting, right-click the option, then choose "What's This?".

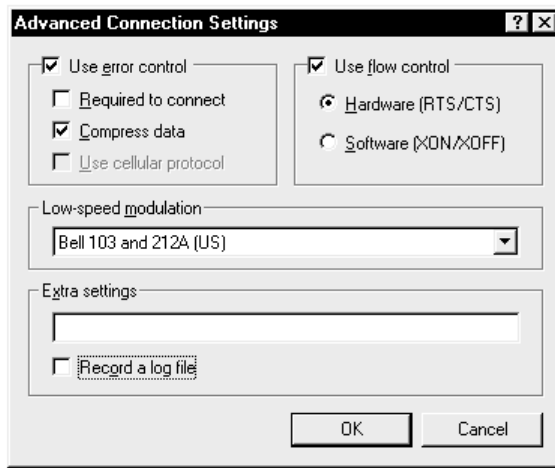
Click the Connection tab to display the following dialog box:



This is where you can specify default connection settings for data bits, parity, and stop bits. In most cases, these settings are made in the communication software you use (like HyperTerminal), but you can change the settings to accommodate the communication device you're connecting to.

Set the Call preference options according to how you want to handle connections and loss of connections. For example, the last setting disconnects a call if there is no activity in the specified number of minutes. You might want to reduce this value if you have a tendency to forget you're connected to an online service.

Click the Advanced button in the Connection tab to display the following dialog box:



Almost no one needs to change these settings anymore, as modern modems handle this stuff automatically. Only change these settings if you're connecting with a service that specifically requests these oddball settings.

Microsoft Plus! for Windows 95 is an optional product that extends the features of Windows 95. The product is designed specifically for Intel 80486 and Pentium processor computers. It contains the following products:

- ⇒ **System Agent** A maintenance utility that runs in the background to handle system monitoring and maintenance at regularly scheduled times. It works with Windows 95 utilities like Defragmenter, ScanDisk, and the compression utilities included with the Plus! package.
- ⇒ **Enhanced compression** Microsoft Plus! enhances DriveSpace to allow large compressed volumes (up to 2GB in size), and compression ratios that are much greater than you get with the normal Windows 95 compression utility.
- ⇒ **Desktop Themes** A set of sound schemes, wallpaper, screen savers, and photo-realistic icons that can improve the appearance and personality of your computer. You can choose from such schemes as *Science*, *The 60's USA*, *Leonardo da Vinci*, *Windows 95*, *Dangerous Creatures*, *Sports*, *Modern*, *Inside Your Computer*, *Mystery*, *Nature*, and *Travel*.
- ⇒ **Dial-up Server** This feature lets you turn your Windows 95 computer into a server that you can dial into from outside your office.
- ⇒ **Multi-Media Pinball** A 3-D pinball game with the look and sound of a real pinball machine.
- ⇒ **Full-Window drag enhancement** Improves the “look and feel” of window drags by showing the full window, rather than a “frame.”
- ⇒ **Font smoothing enhancement** Improves the appearance of fonts and makes them easier to read.
- ⇒ **One-button Internet access** Improves Internet setup and access. Includes Microsoft's own Internet Browser, Internet e-mail, and Internet newsgroups.

Microsoft Plus! should be available on store shelves at the same time as the release of Windows 95.